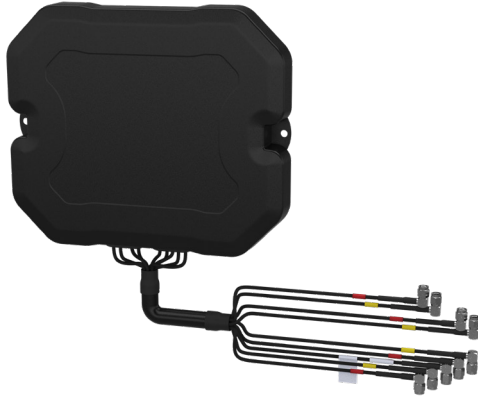


# 4x4 MiMo 4G/5G Case Mount Antenna

CASEANT[X]4-6-60[-X]



- Adhesive mount antenna designed for easy installation in cases
- Works when the case is open or closed when mounted in the lid
- 4x4 MiMo 617-960/1427-6000MHz
- Up to 4x4 MiMo WiFi 6e
- Optional active GPS/GNSS - L1 or L1/L5
- Loomed cables with right angled connectors for easy installation

The Panorama CASEANT[[X]4-6-60[-X] range is a 4x4 MiMo antenna solution for 4G / 5G specifically designed for deployable cases.

The 4G/5G antenna elements cover 617-960/1427-6000MHz providing a robust communications link to ensure high data rates even in challenging network coverage areas. The efficient element design allows the antennas to work when the case is open or closed.

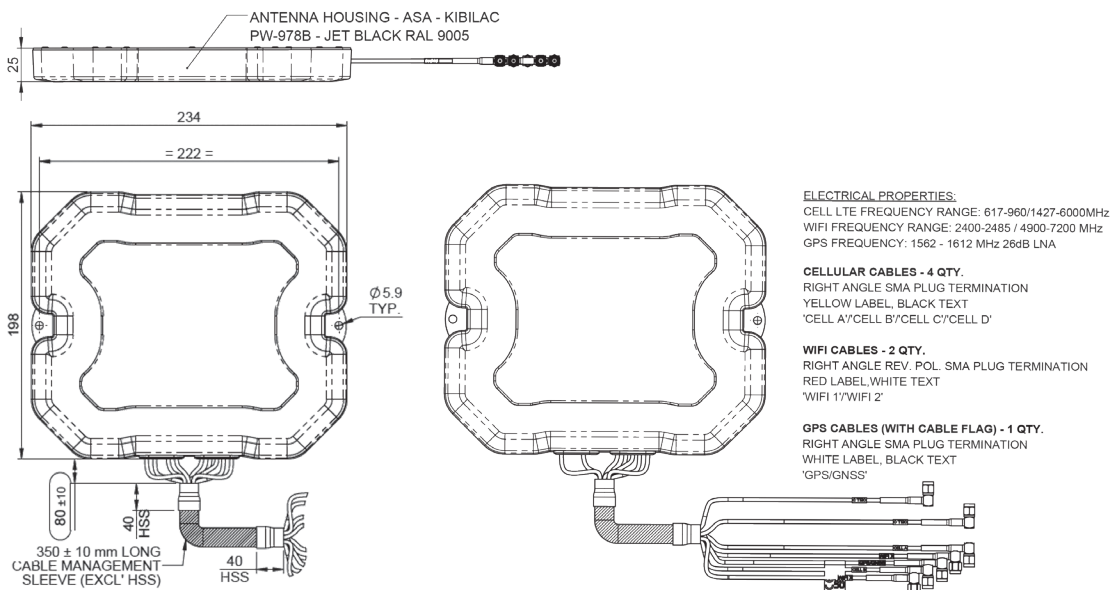
CASEANTG[5]4 variants include a GPS/GNSS module with advanced filtering covering either L1/E1/G1/B1 or L1/E1/G1/B1 & L5. Additional variants also contain 2,3 or 4 WiFi elements which cover 2.4-7.2GHz for WiFi 6e.

The antenna is supplied with integrated low loss flame retardant cables fitted with protective sleeving to assist with routing within the case and right angled connectors for easy installation.

Panorama can provide RF measurement services for case products and design of foam inserts, ducting and other installation collateral upon request. These services are sold separately.

## Technical Drawing

CASEANTG4-6-60-D Shown



Product Data

Part No.		CASEANTG4-6-60-Q	CASEANTG4-6-60-T	CASEANTG4-6-60-D	CASEANTG4-6-60
<b>Electrical Data</b>					
Frequency Range (MHz)	Cell /LTE	4x 617-960 / 1427-6000			
	WiFi	4x 2396-7125	3x 2396-7125	2x 2396-7125	-
	GPS/GNSS	1x 1559-1612			
Typical VSWR*	Cell Elements	<2.5:1			
	WiFi Elements	< 2:1			
Isolation (dB)**	Cell Elements	≥ 7 (617-960MHz) / ≥ 12 (1427-1518MHz) / ≥ 12 (1710-2700MHz) / ≥ 20 (3300-6000MHz)			
	Wifi Elements	>20			
Pattern	Omni-directional				
Impedance	50Ω				
Max Input Power (W)	5				
<b>GPS/GNSS Data</b>					
Frequency Range (MHz)	1559-1612				
Impedance	50Ω				
LNA Gain	26dB				
Voltage / Current	3-5v 17ma Typical				
Polarisation	Right Hand Circular				
<b>Mechanical Data</b>					
Dimensions (mm)	Height	25 (1")			
	Width	232 (13.78")			
	Length	196 (9.1")			
<b>Environmental Specification</b>					
Operating Temp (°C)	-40° / +80°C ( -40° / +176°F )				
Radome Material	ASA				
Radome Material Approvals	HB (UL 94) / UL746C F1				
Ingress Protection	IP55				
<b>Mounting Data</b>					
Fixing	3M VHB Adhesive Pad				
<b>Cable Data</b>					
Cable Type	CS30 [Cell and WiFi] / FR RG174 [GPS/GNSS]				
Cable Diameter (mm)	2.8 (0.1")				
Cable Length (m)	0.75 (2.4')				
Termination	4G/5G	4x Right Angle SMA Plug (m)			
	WiFi	4x Right Angle Rev Pol SMA	3x Right Angle Rev Pol SMA	2x Right Angle Rev Pol SMA	-
	GPS/GNSS	1x Right AngleSMA Plug (m)			

\*Measured in free space with 0.5m (1.6') of CS30 cable \*\*Worst case isolation measured with 0.5m (1.6') CS30 cable

# 4x4 MiMo 4G/5G Case

## Mount Antenna

CASEANT[X]4-6-60[-X]

### Product Data

#### Part No.

CASEANTG54-6-60-Q CASEANTG54-6-60-T CASEANTG54-6-60-D CASEANTG54-6-60

#### Electrical Data

Frequency Range (MHz)	Cell /LTE	4x 617-960 / 1427-6000			
	WiFi	4x 2396-7125	3x 2396-7125	2x 2396-7125	-
	GPS/GNSS	1559-1612 / 1164-1189			
Typical VSWR*	Cell Elements	<2.5:1			
	WiFi Elements	< 2:1			
Isolation (dB)**	Cell Elements	≥ 7 (617-960MHz) / ≥ 12 (1427-1518MHz) / ≥ 12 (1710-2700MHz) / ≥ 20 (3300-6000MHz)			
	Wifi Elements	>20			
Pattern	Omni-directional				
Impedance	50Ω				
Max Input Power (W)	5				

#### GPS/GNSS Data

Frequency Range (MHz)	1559-1612 / 1164-1189
Impedance	50Ω
LNA Gain	30dB / 26dB
Voltage / Current	3-5v 36ma Typical
Polarisation	Right Hand Circular

#### Mechanical Data

Dimensions (mm)	Height	25 (1")
	Width	232 (13.78")
	Length	196 (9.1")

#### Environmental Specification

Operating Temp (°C)	-40° / +80°C ( -40° / +176°F )
Radome Material	ASA
Radome Material Approvals	HB (UL 94) / UL746C F1
Ingress Protection	IP55

#### Mounting Data

Fixing	3M VHB Adhesive Pad
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#### Cable Data

Cable Type	CS30 [Cell and WiFi] / FR RG174 [GPS/GNSS]
Cable Diameter (mm)	2.8 (0.1")
Cable Length (m)	0.75 (2.4')

Termination	4G/5G	4x Right Angle SMA Plug (m)			
	WiFi	4x Right Angle Rev Pol SMA	3x Right Angle Rev Pol SMA	2x Right Angle Rev Pol SMA	-
	GPS/GNSS	1x Right Angle SMA Plug (m)			

\*Measured in free space with 0.5m (1.6') of CS30 cable \*\*Worst case isolation measured with 0.5m (1.6') CS30 cable

# 4x4 MiMo 4G/5G Case

## Mount Antenna

CASEANT[X]4-6-60[-X]

### Product Data

Part No.		CASEANT4-6-60-Q	CASEANT4-6-60-T	CASEANT4-6-60-D	CASEANT4-6-60
<b>Electrical Data</b>					
Frequency Range (MHz)	Cell /LTE	4x 617-960 / 1427-6000			
	WiFi	4x 2396-7125	3x 2396-7125	2x 2396-7125	-
Typical VSWR*	Cell Elements	<2.5:1			
	WiFi Elements	< 2:1			
Isolation (dB)**	Cell Elements	≥ 7 (617-960MHz) / ≥ 12 (1427-1518MHz) / ≥ 12 (1710-2700MHz) / ≥ 20 (3300-6000MHz)			
	Wifi Elements	>20			
Pattern	Omni-directional				
Impedance	50Ω				
Max Input Power (W)	5				
<b>Mechanical Data</b>					
Dimensions (mm)	Height	25 (1")			
	Width	232 (13.78")			
	Length	196 (9.1")			
<b>Environmental Specification</b>					
Operating Temp (°C)	-40° / +80°C ( -40° / +176°F )				
Radome Material	ASA				
Radome Material Approvals	HB (UL 94) / UL746C F1				
Ingress Protection	IP55				
<b>Mounting Data</b>					
Fixing	3M VHB Adhesive Pad				
<b>Cable Data</b>					
Cable Type	CS30 (UN ECE R118 Compliant)				
Cable Diameter (mm)	2.8 (0.1")				
Cable Length (m)	0.75 (2.4')				
Termination	4G/5G	4x Right Angle SMA Plug (m)			
	WiFi	4x Right Angle Rev Pol SMA	3x Right Angle Rev Pol SMA	2x Right Angle Rev Pol SMA	-

\*Measured in free space with 0.5m (1.6') of CS30 cable \*\*Worst case isolation measured with 0.5m (1.6') CS30 cable

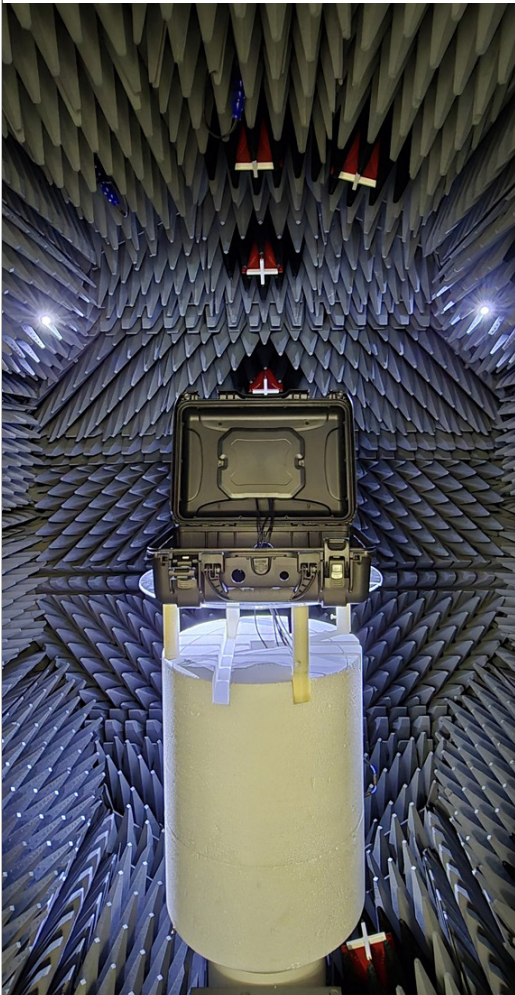
# 4x4 MiMo 4G/5G Case

## Mount Antenna

CASEANT[X]4-6-60[-X]

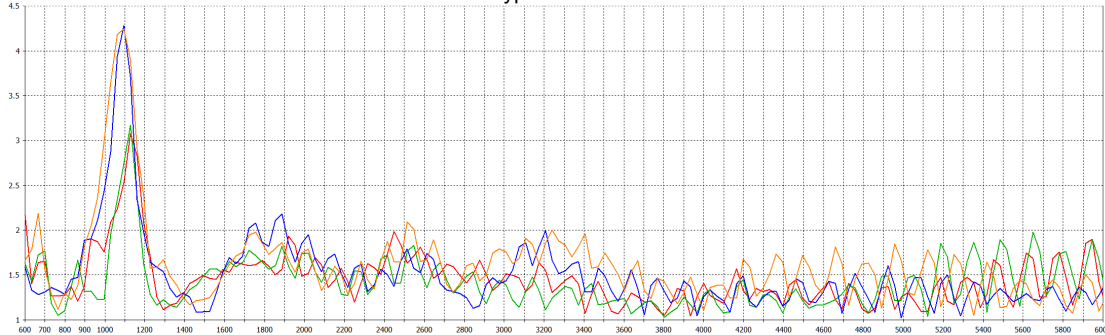
Electrical Data- Cell  
- Open

Measurement Conditions	4G/5G Antennas				
Results provided based on version of product with 2 WiFi measured mounted in an open hard case in free space with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	617-698	71	Cell A	3.8	57
			Cell B	1.6	55
			Cell C	2.9	48
			Cell D	4.7	60
	699-798	12,13, 14 17,28	Cell A	3.0	52
			Cell B	1.8	46
			Cell C	3.0	51
			Cell D	4.1	57
	807- 862	5,19,20,26,27	Cell A	3.1	62
			Cell B	2.6	47
			Cell C	2.8	51
			Cell D	4.7	64
	880-960	8	Cell A	3.1	54
			Cell B	2.2	51
			Cell C	2.1	49
			Cell D	2.8	59
	1427-1518	11, 21, 74,75,76	Cell A	2.7	51
			Cell B	3.3	58
			Cell C	3.5	61
			Cell D	4.0	64
1710-1920	2,3,4,9,25,35, 39,66	Cell A	3.7	62	
		Cell B	4.6	57	
		Cell C	4.1	56	
		Cell D	4.2	59	
1920-2170	1,23	Cell A	4.6	64	
		Cell B	5.4	61	
		Cell C	4.6	64	
		Cell D	4.6	68	
2300-2400	30,40	Cell A	3.6	54	
		Cell B	4.0	48	
		Cell C	4.5	66	
		Cell D	3.9	60	
2496-2690	7,38,41	Cell A	3.7	57	
		Cell B	2.8	47	
		Cell C	3.4	66	
		Cell D	4.5	64	
3300-4200	22,42,43,48,77, 78,79	Cell A	6.1	64	
		Cell B	5.7	59	
		Cell C	4.8	61	
		Cell D	5.8	64	
4400-5000	79	Cell A	5.8	55	
		Cell B	6.1	55	
		Cell C	4.9	56	
		Cell D	5.8	59	

Measurement Conditions	WiFi Antennas				
Results provided based on version of product with 2 WiFi measured mounted in an open hard case in free space with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	2396-2485	2.4GHz	WiFi 1	3.6	55
			WiFi 2	2.7	58
	5150-5250	UNII-1	WiFi 1	5.1	54
			WiFi 2	4.8	58
	5250-5350	UNII-2A	WiFi 1	5.0	52
			WiFi 2	3.3	57
	5350-5470	UNII-2B	WiFi 1	4.1	52
			WiFi 2	3.7	57
	5470-5725	UNII-2C	WiFi 1	5.1	50
			WiFi 2	5.5	58
	5725-5850	UNII-3	WiFi 1	5.1	50
			WiFi 2	5.6	58
	5850-5925	UNII-4	WiFi 1	4.7	49
			WiFi 2	4.9	57
	5925-6425	UNII-5	WiFi 1	5.5	50
			WiFi 2	5.6	56
6425-6525	UNII-6	WiFi 1	5.9	48	
		WiFi 2	5.4	54	
6525-6875	UNII-7	WiFi 1	6.3	45	
		WiFi 2	6.0	51	
6875-7125	UNII-8	WiFi 1	5.6	46	
		WiFi 2	6.6	53	

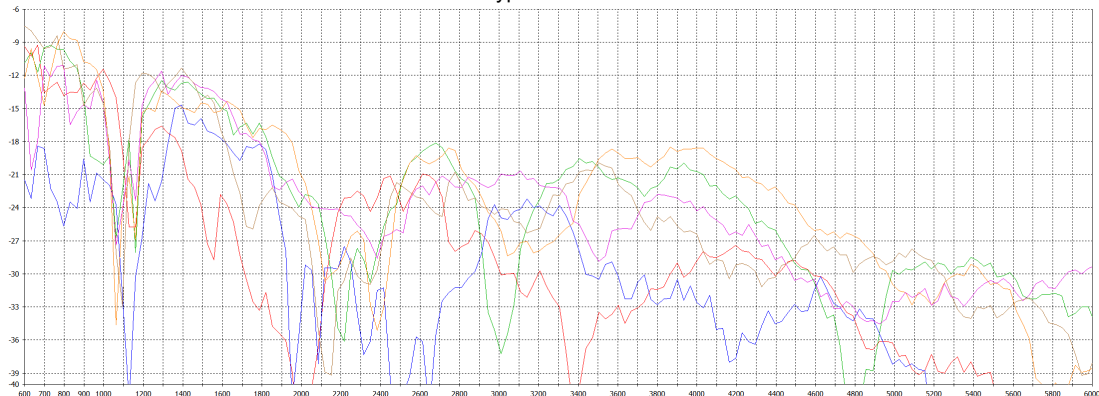
Electrical Data- Cell  
Free Space - Open

Typical VSWR \*



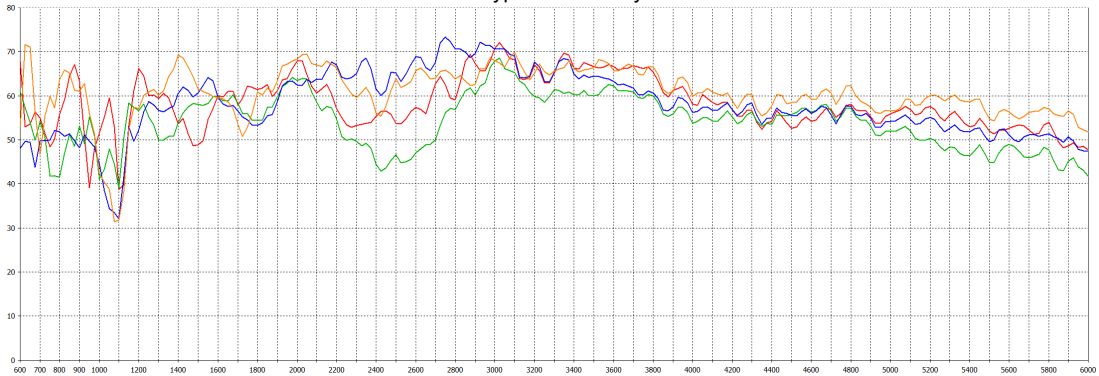
\*VSWR measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable

Typical Isolation \*



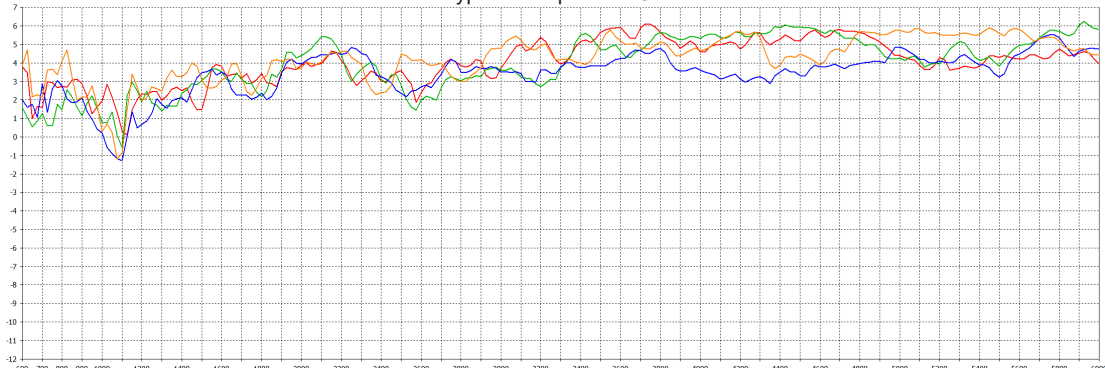
\*Isolation measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable

Typical Efficiency\*



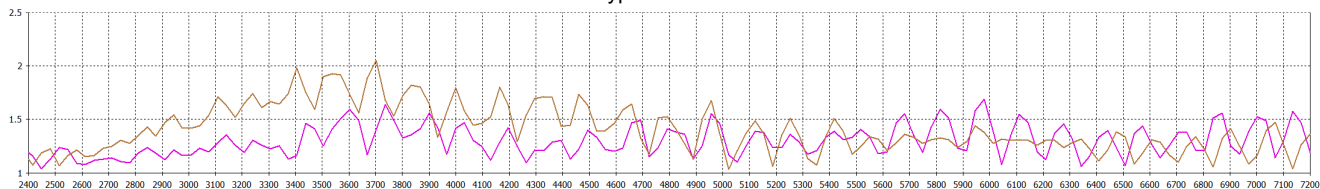
\*Efficiency measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain\*



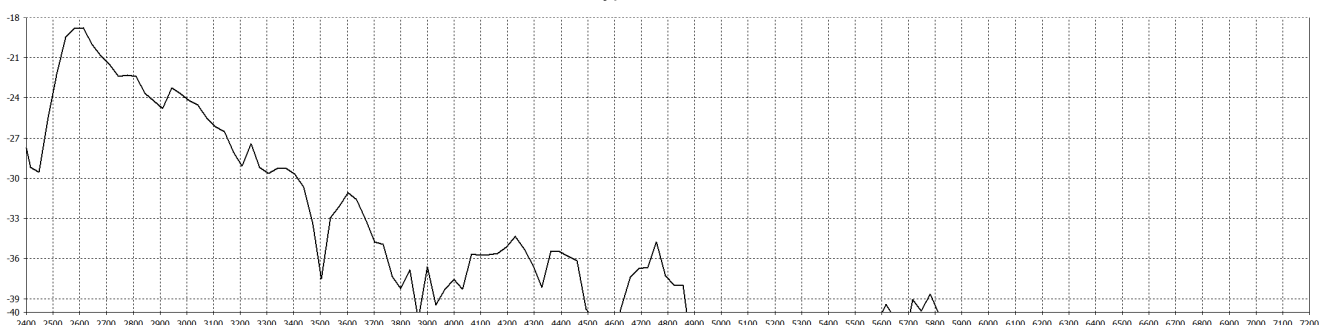
\*Peak Gain measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable

Typical VSWR \*



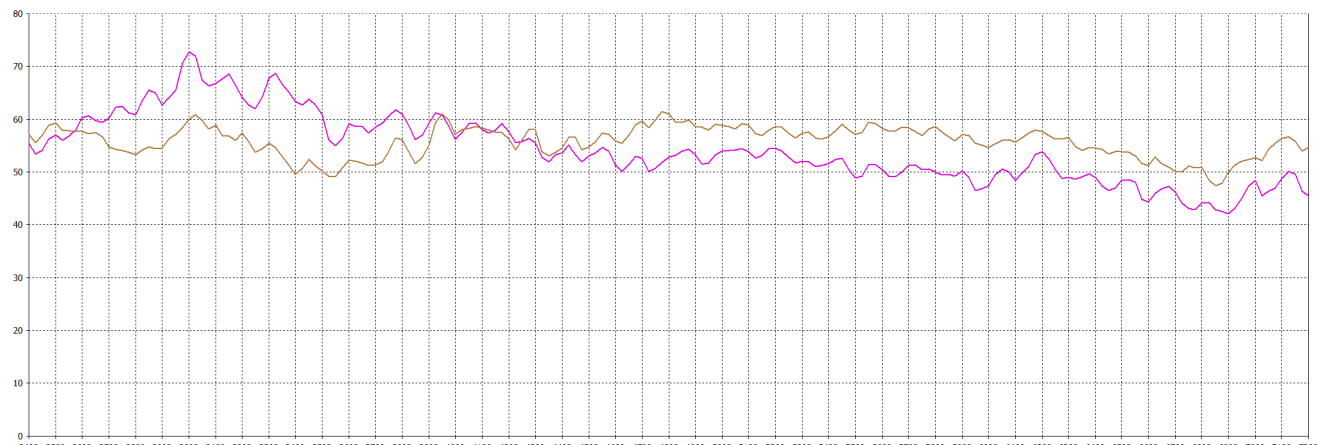
\*VSWR measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable

Typical Isolation \*



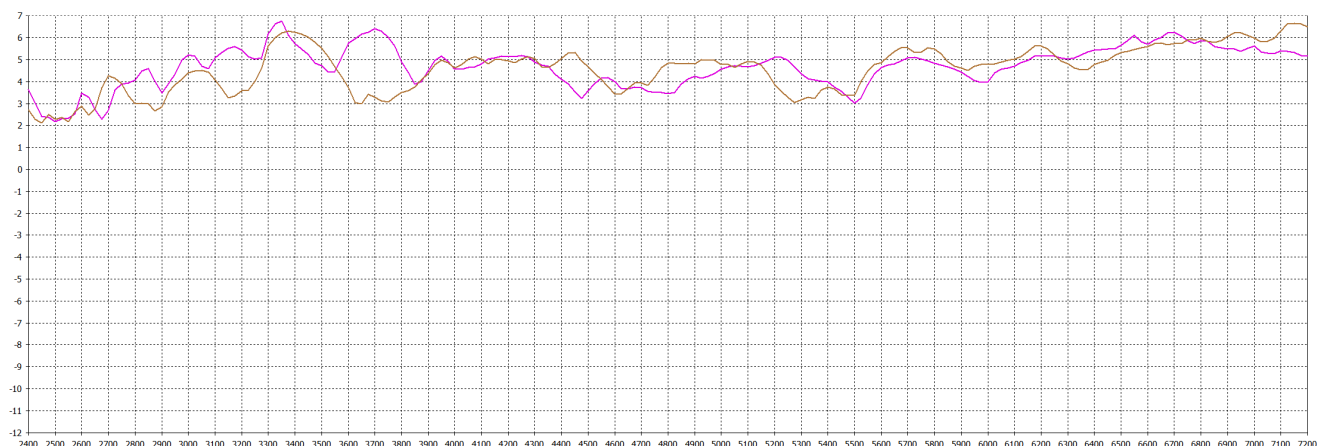
\*Isolation measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable

Typical Efficiency\*



\*Efficiency measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain\*



\*Peak Gain measured mounted in an open hard case in free space with 0.5m (1.6') of CS30 cable



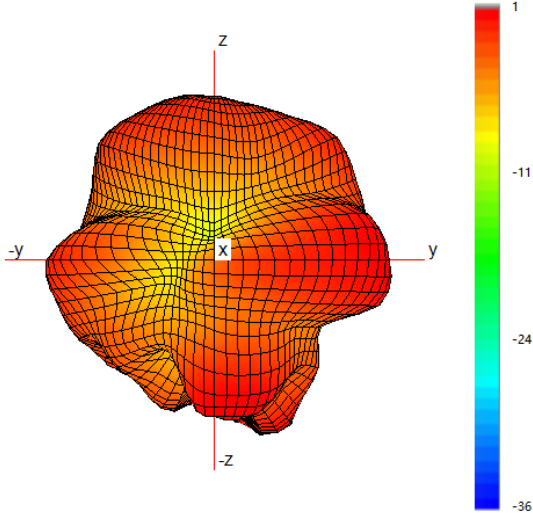
# 4x4 MiMo 4G/5G Case

## Mount Antenna

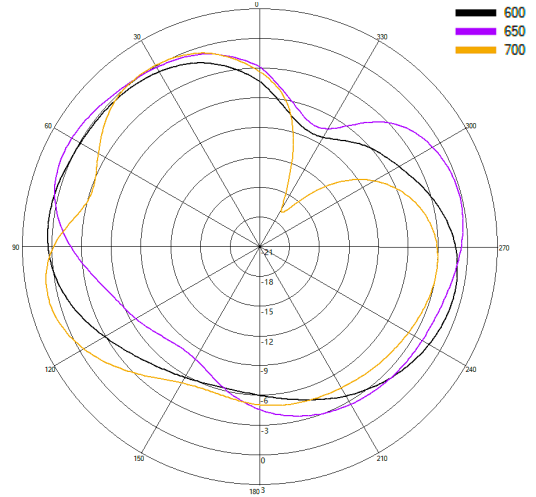
CASEANT[X]4-6-60[-X]

3D Patterns - Cell A  
Free Space - Open

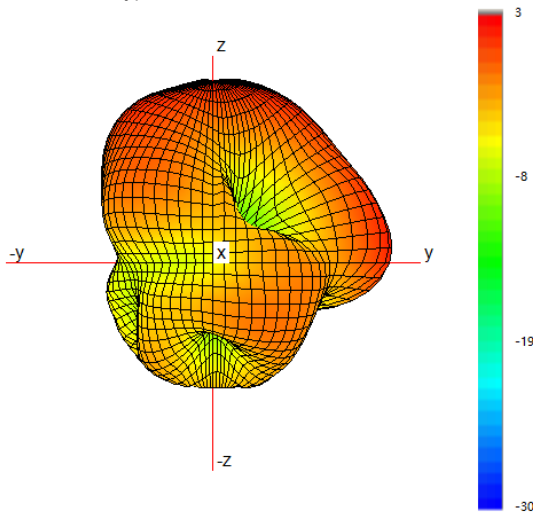
Typical 3D Pattern- Cell A - 650 MHz



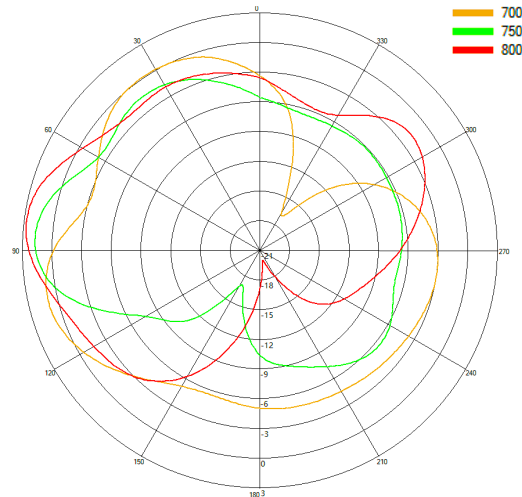
Typical H Plane- Cell A - Patterns- 600-700MHz



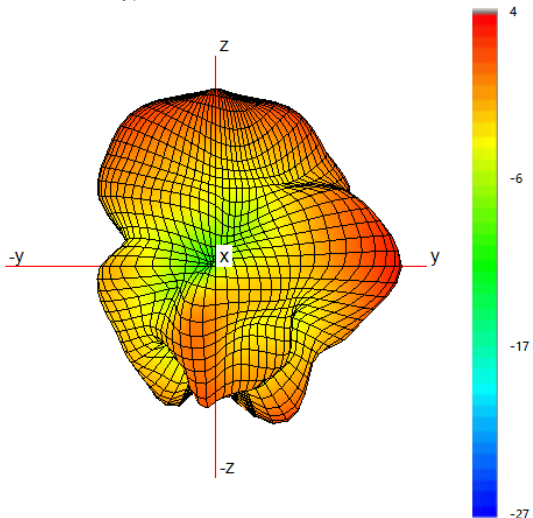
Typical 3D Pattern- Cell A - 750 MHz



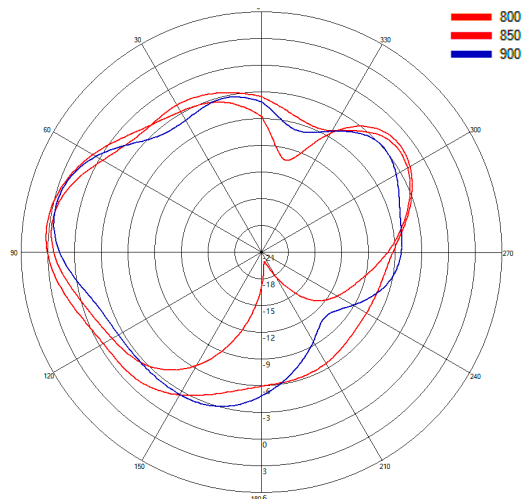
Typical H Plane- Cell A - Patterns- 700-800MHz



Typical 3D Pattern- Cell A - 850 MHz

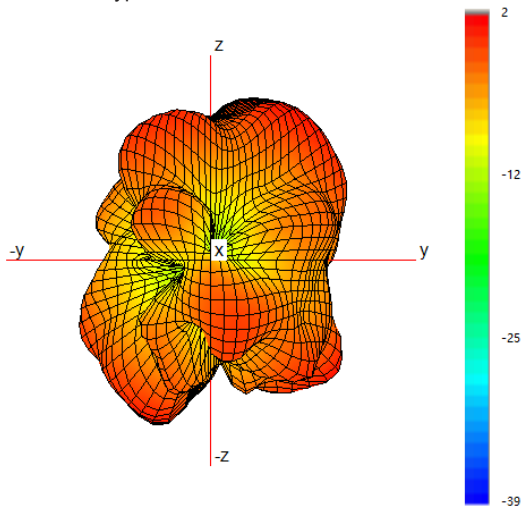


Typical H Plane- Cell A - Patterns- 800-900MHz

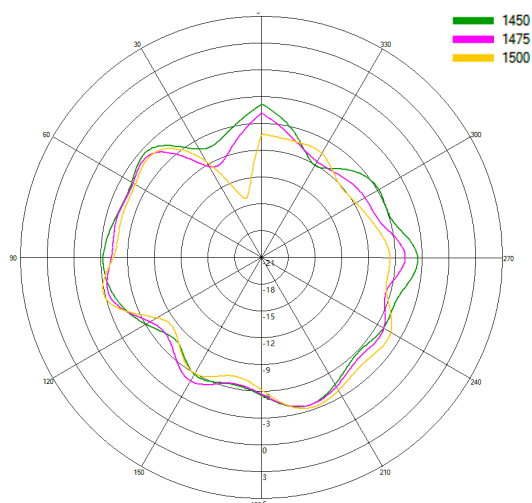


3D Patterns -Cell A  
Free Space - Open

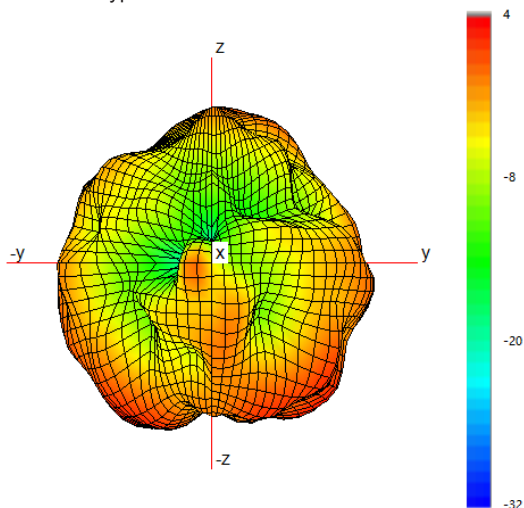
Typical 3D Pattern- Cell A - 1475 MHz



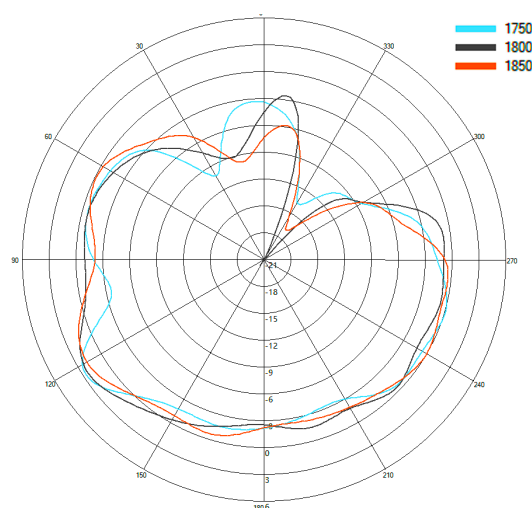
Typical H Plane- Cell A- Patterns- 1450-1500 MHz



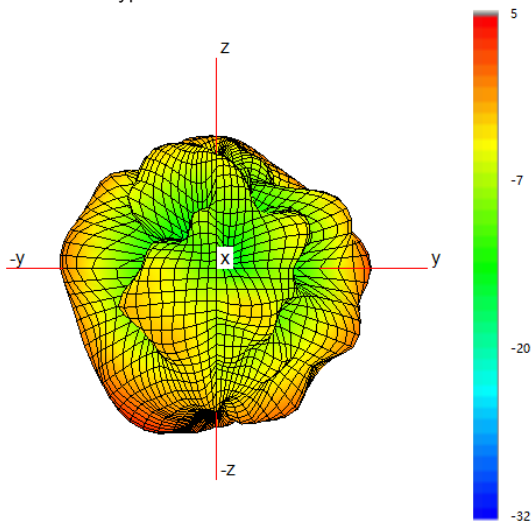
Typical 3D Pattern- Cell A - 1800 MHz



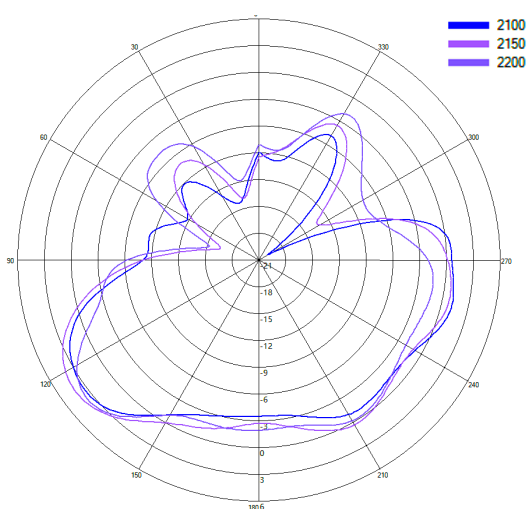
Typical H Plane- Cell A- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell A - 2150 MHz



Typical H Plane- Cell A- Patterns- 2100-2200 MHz



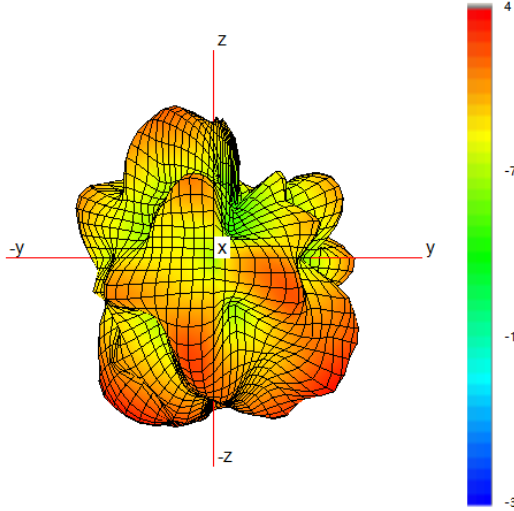
# 4x4 MiMo 4G/5G Case

## Mount Antenna

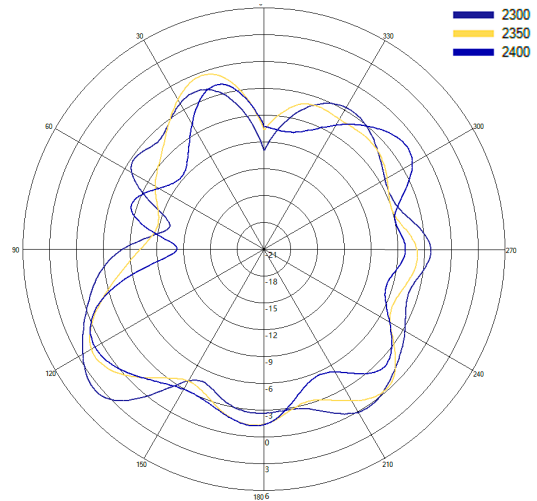
CASEANT[X]4-6-60[-X]

3D Patterns - Cell A  
Free Space - Open

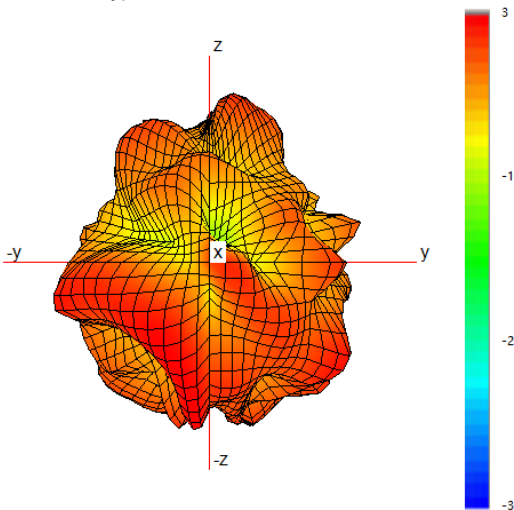
Typical 3D Pattern- Cell A - 2350 MHz



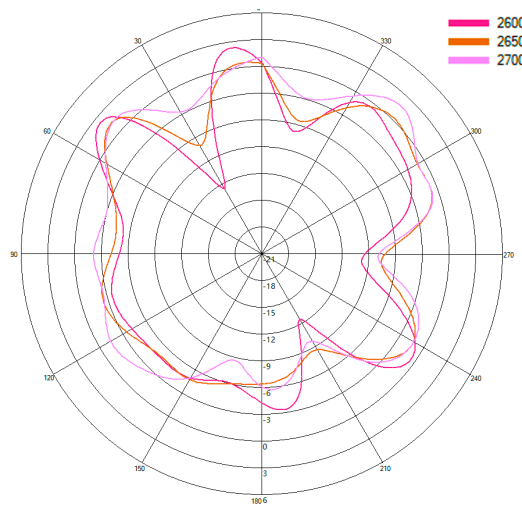
Typical H Plane- Cell A - Patterns- 2300-2400 MHz



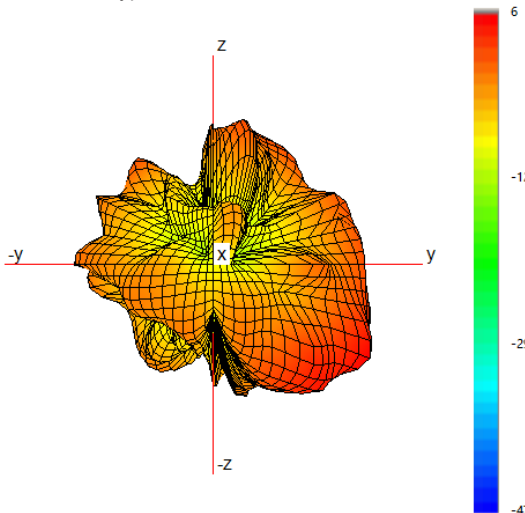
Typical 3D Pattern- Cell A - 2650 MHz



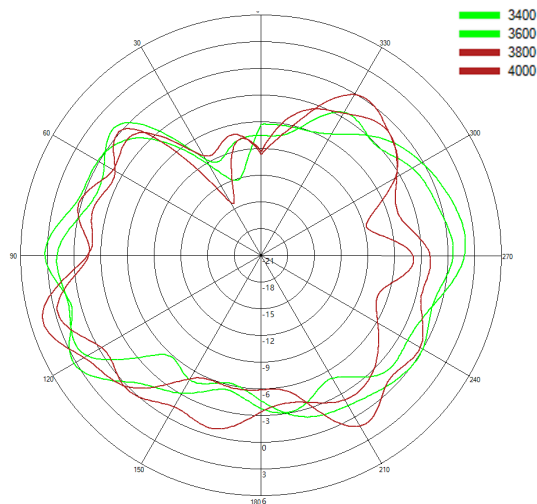
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz

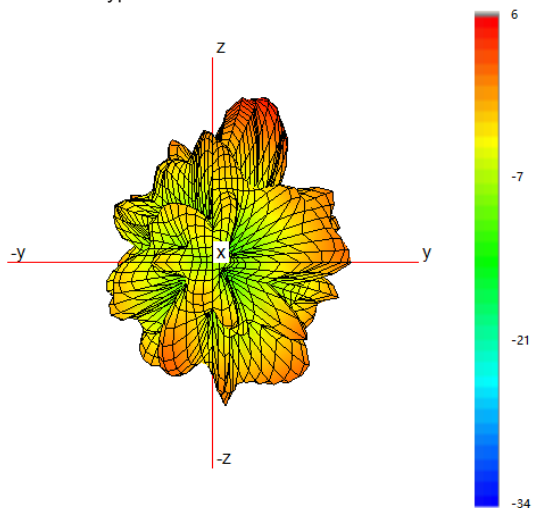


Typical H Plane- Cell A - Patterns- 3400-4000 MHz

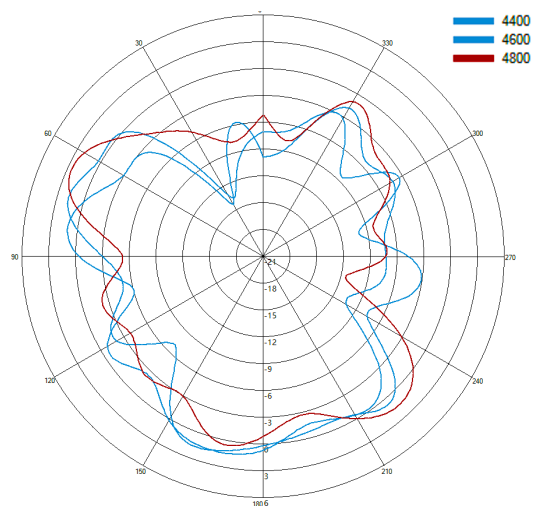


3D Patterns -Cell A  
Free Space - Open

Typical 3D Pattern- Cell A - 4700 MHz



Typical H Plane- Cell A - Patterns- 4400-4800 MHz



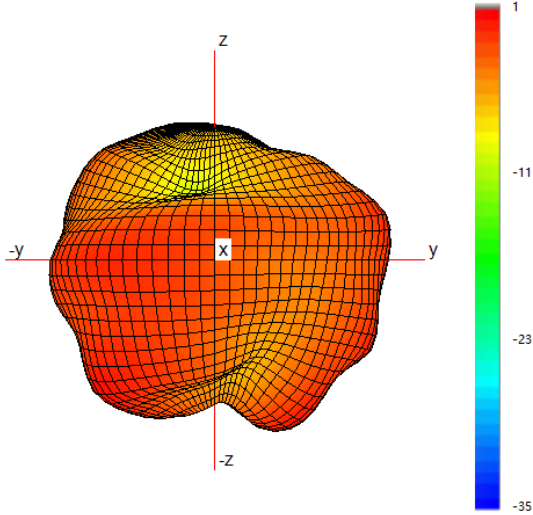
# 4x4 MiMo 4G/5G Case

## Mount Antenna

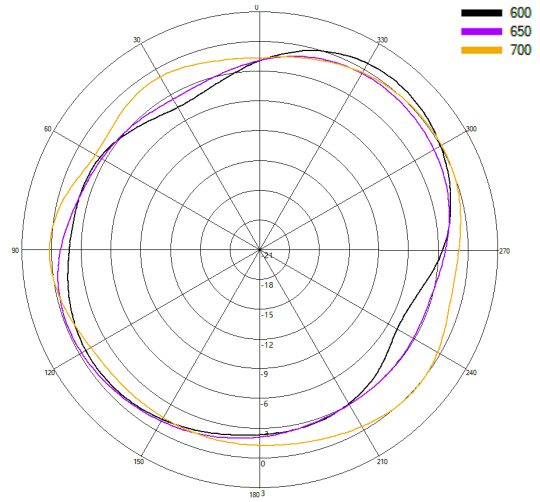
CASEANT[X]4-6-60[-X]

3D Patterns - Cell B  
Free Space - Open

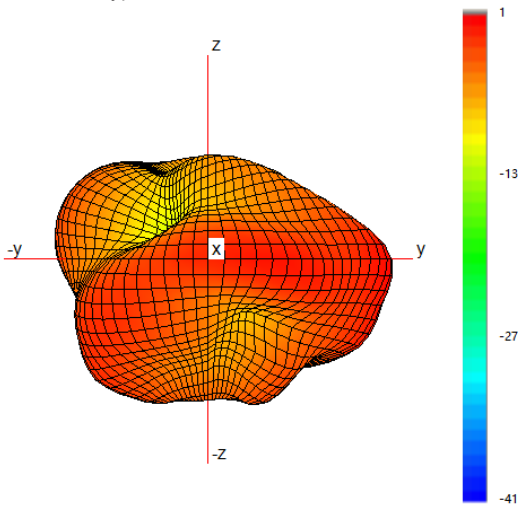
Typical 3D Pattern- Cell B - 650 MHz



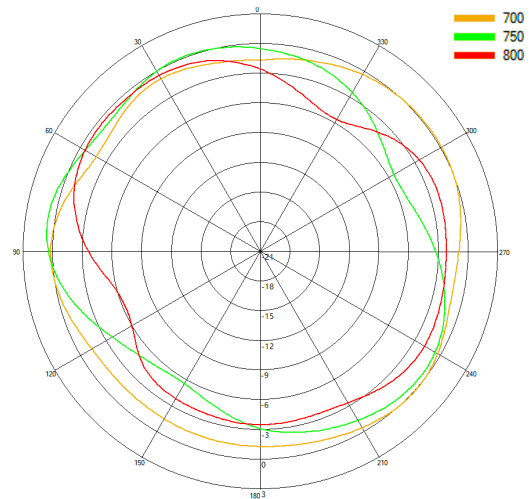
Typical H Plane- Cell B - Patterns- 600-700MHz



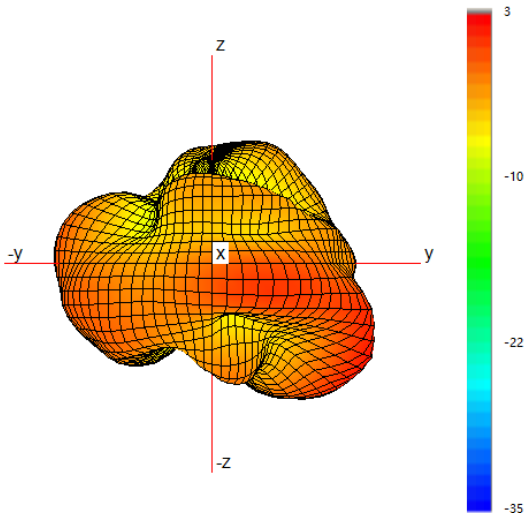
Typical 3D Pattern- Cell B - 750 MHz



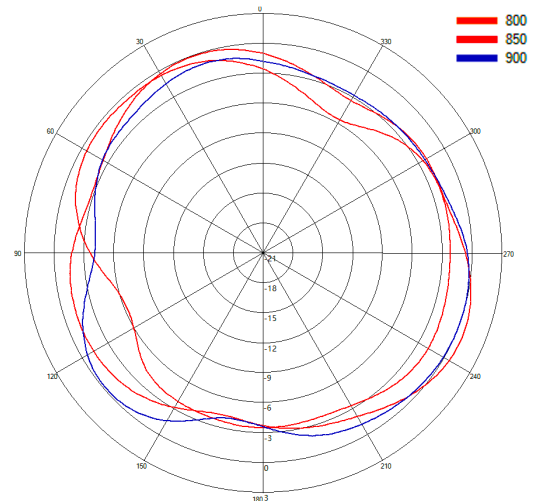
Typical H Plane- Cell B - Patterns- 700-800MHz



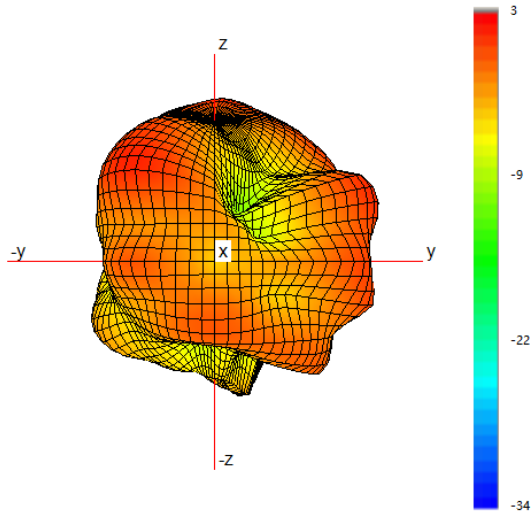
Typical 3D Pattern- Cell B - 850 MHz



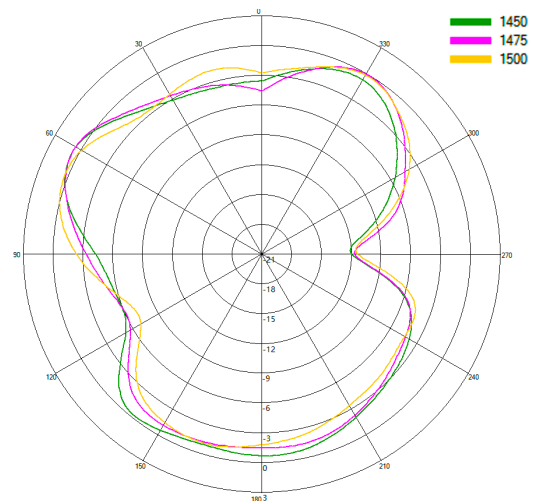
Typical H Plane- Cell B - Patterns- 800-900MHz



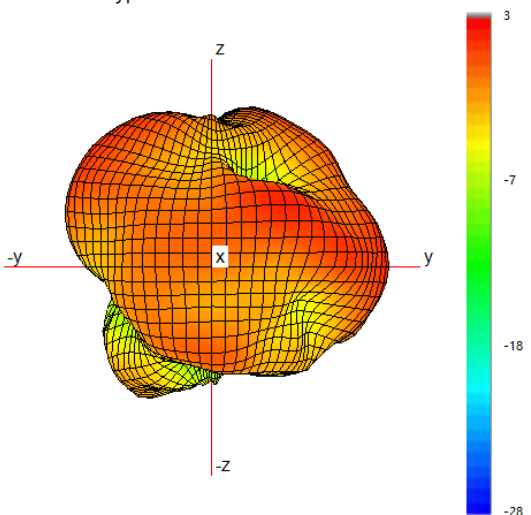
Typical 3D Pattern- Cell B - 1475 MHz



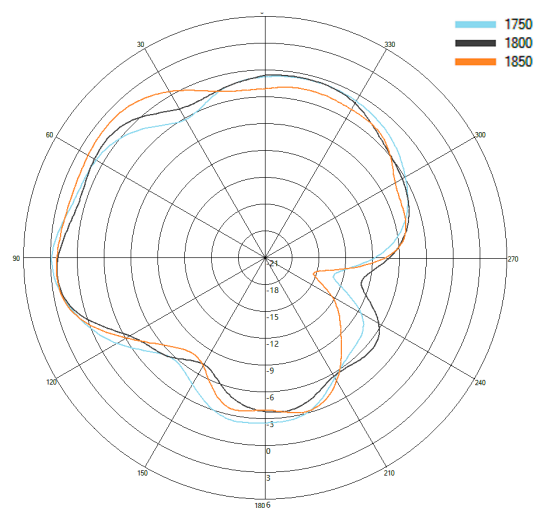
Typical H Plane- Cell B- Patterns- 1450-1500 MHz



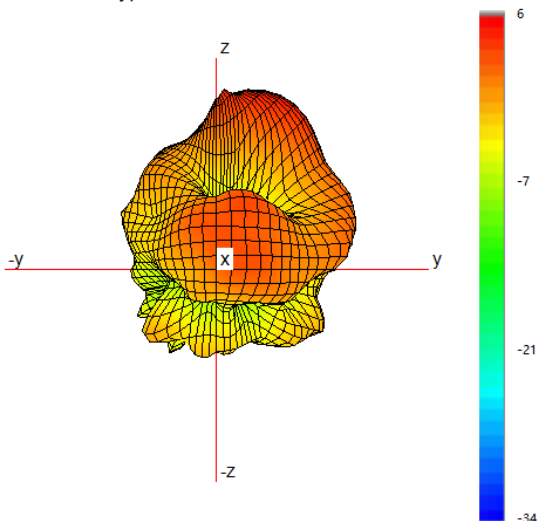
Typical 3D Pattern- Cell B - 1800 MHz



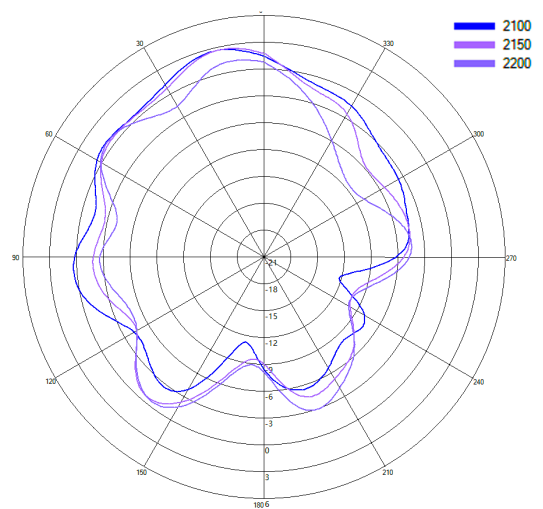
Typical H Plane- Cell B- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell B - 2150 MHz



Typical H Plane- Cell B- Patterns- 2100-2200 MHz

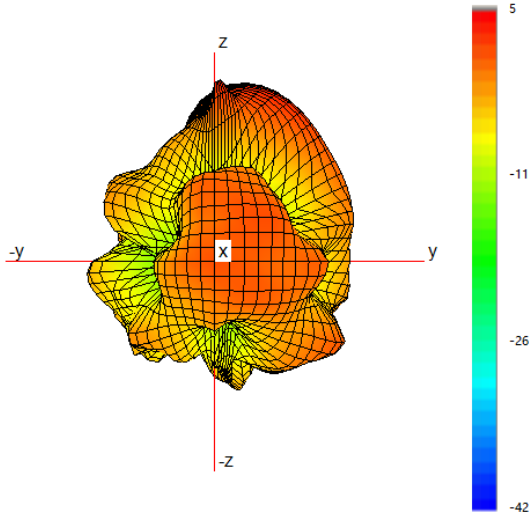


# 4x4 MiMo 4G/5G Case Mount Antenna

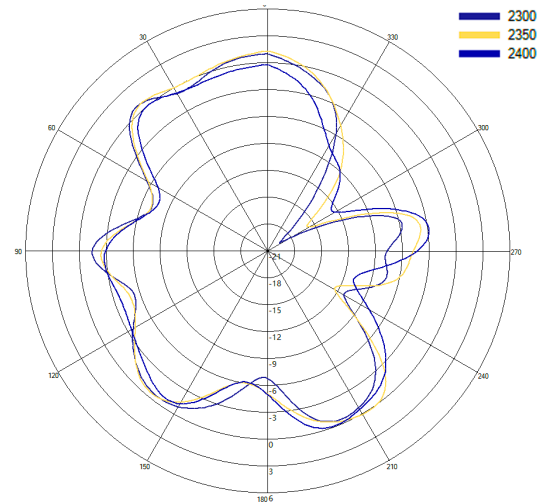
CASEANT[X]4-6-60[-X]

3D Patterns - Cell B  
Free Space - Open

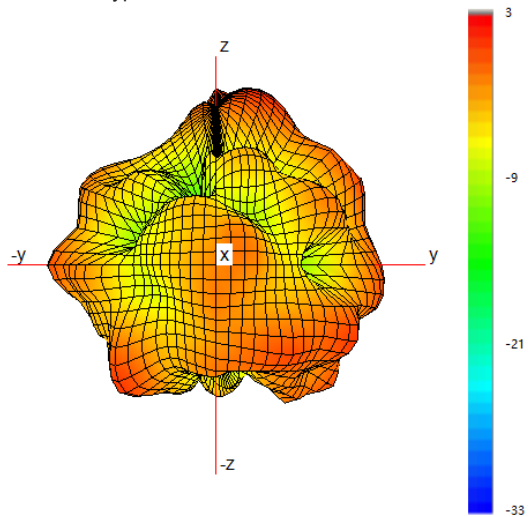
Typical 3D Pattern- Cell B - 2350 MHz



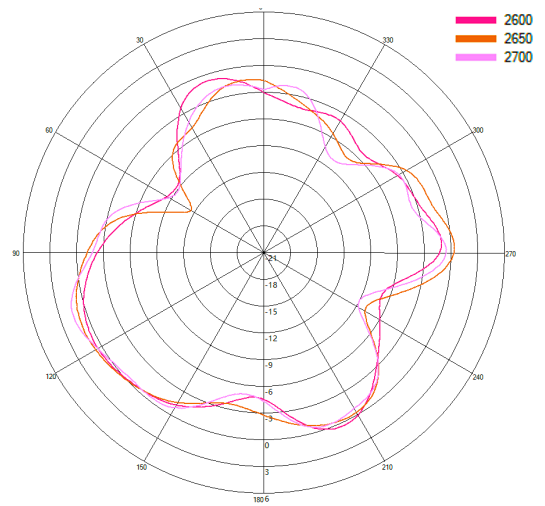
Typical H Plane- Cell B - Patterns- 2300-2400 MHz



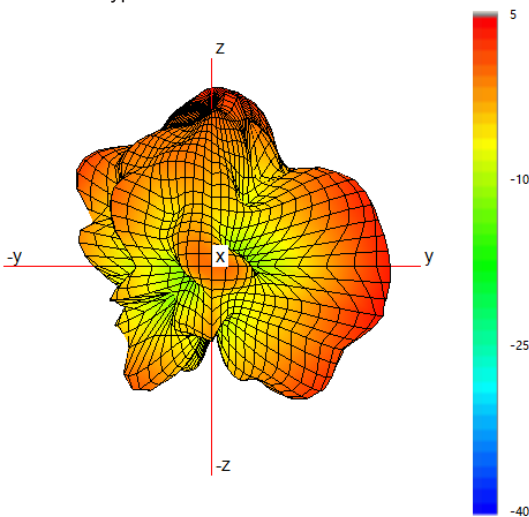
Typical 3D Pattern- Cell B - 2650 MHz



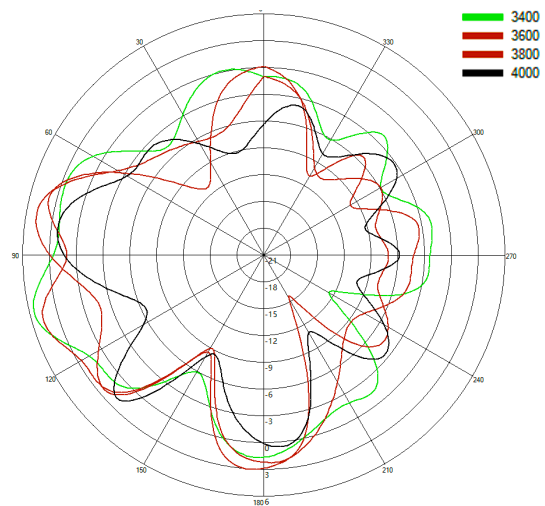
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



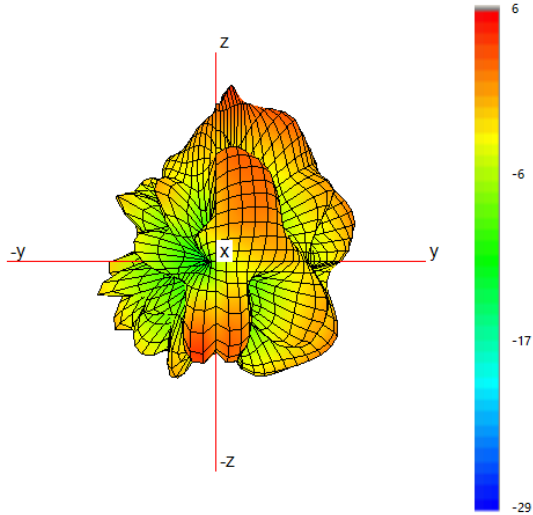
Typical 3D Pattern- Cell B - 3600 MHz



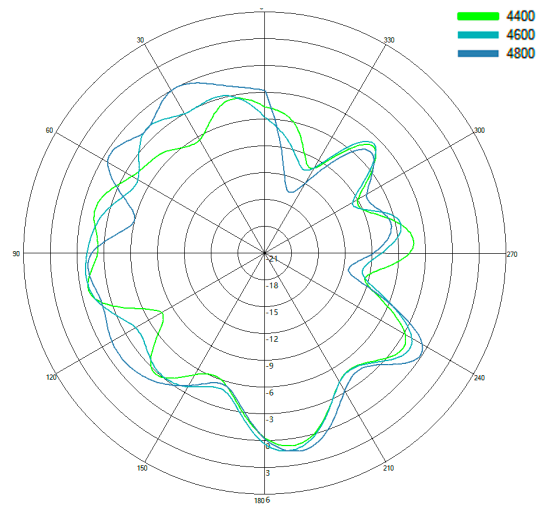
Typical H Plane- Cell B - Patterns- 3400-4000 MHz



Typical 3D Pattern- Cell B - 4700 MHz



Typical H Plane- Cell B - Patterns- 4400-4800 MHz





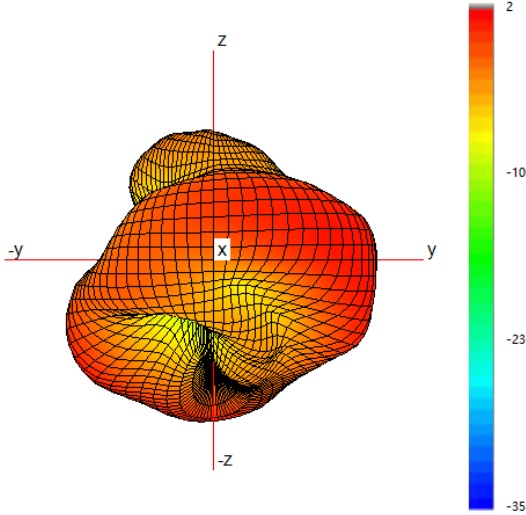
# 4x4 MiMo 4G/5G Case

## Mount Antenna

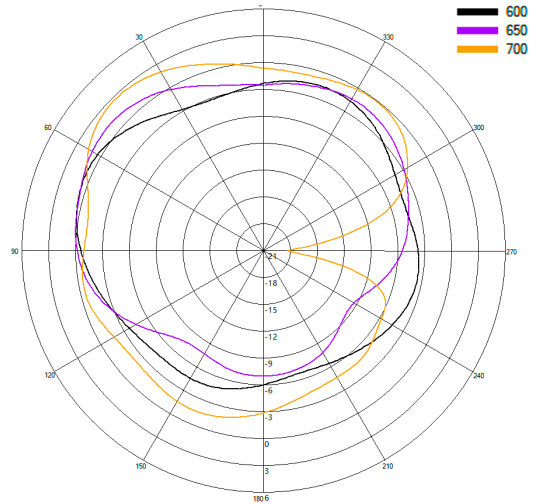
CASEANT[X]4-6-60[-X]

3D Patterns -Cell C  
Free Space - Open

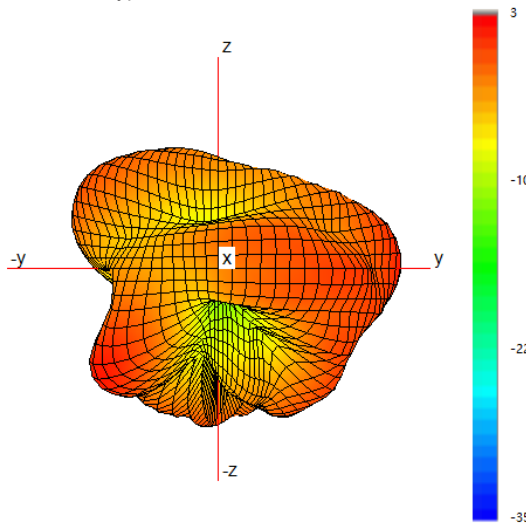
Typical 3D Pattern- Cell C - 650 MHz



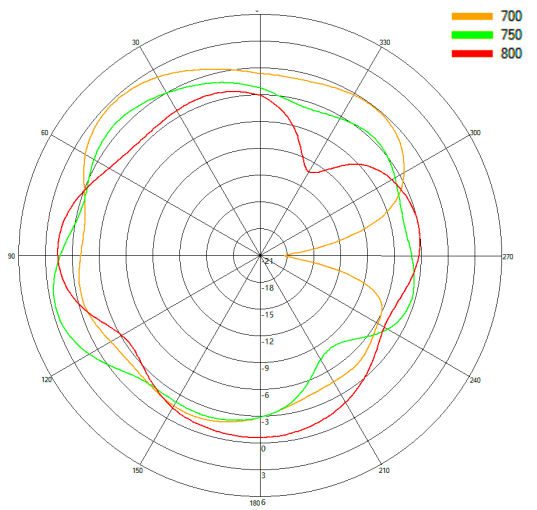
Typical H Plane- Cell C - Patterns- 600-700MHz



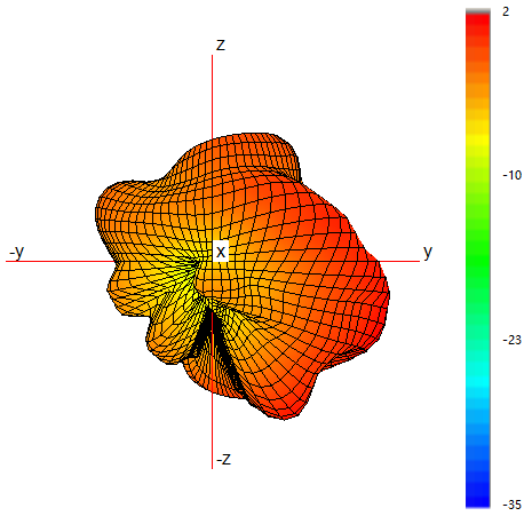
Typical 3D Pattern- Cell C - 750 MHz



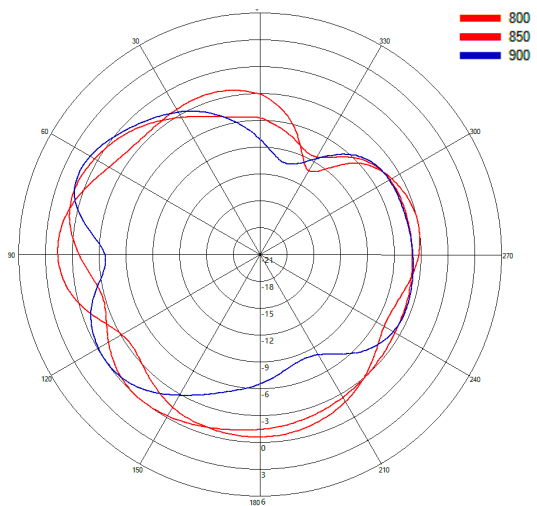
Typical H Plane- Cell C - Patterns- 700-800MHz



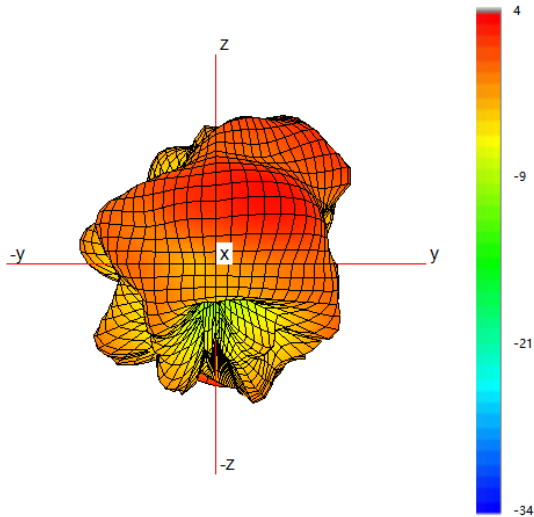
Typical 3D Pattern- Cell C - 850 MHz



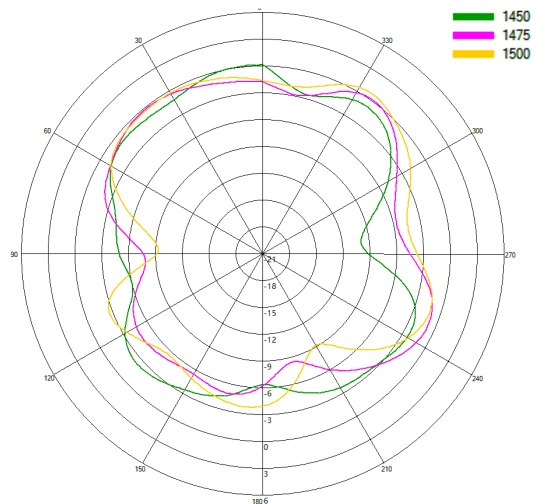
Typical H Plane- Cell C - Patterns- 800-900MHz



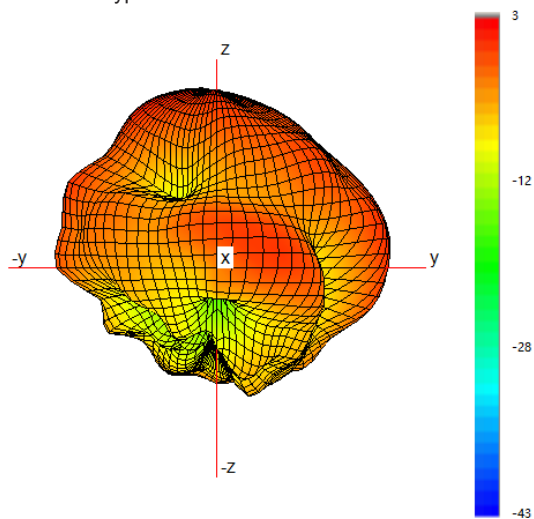
Typical 3D Pattern- Cell C - 1475 MHz



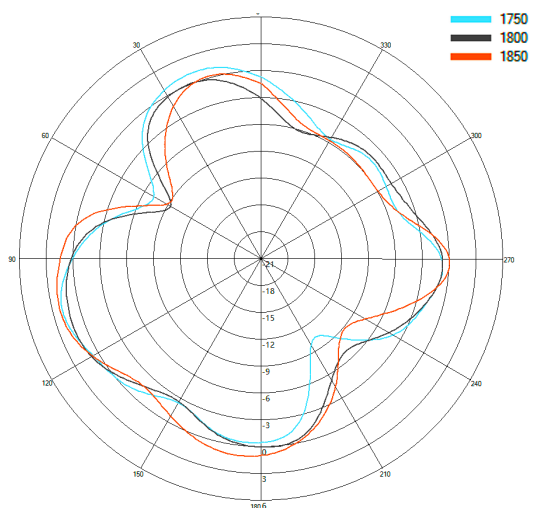
Typical H Plane- Cell C- Patterns- 1450-1500 MHz



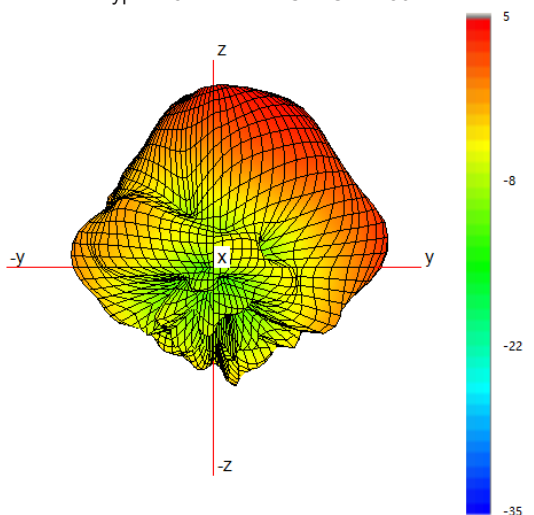
Typical 3D Pattern- Cell C - 1800 MHz



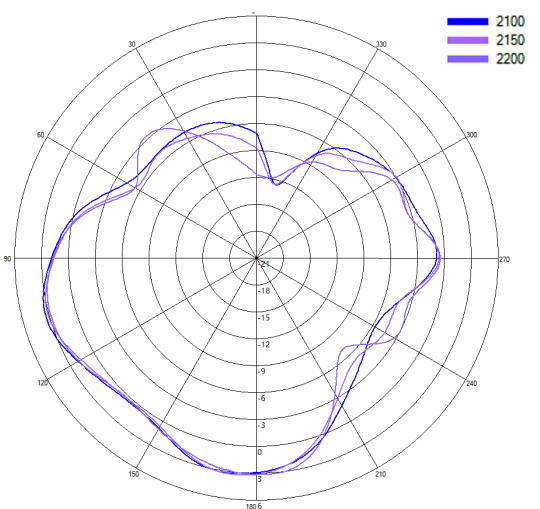
Typical H Plane- Cell C- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell C - 2150 MHz



Typical H Plane- Cell C- Patterns- 2100-2200 MHz

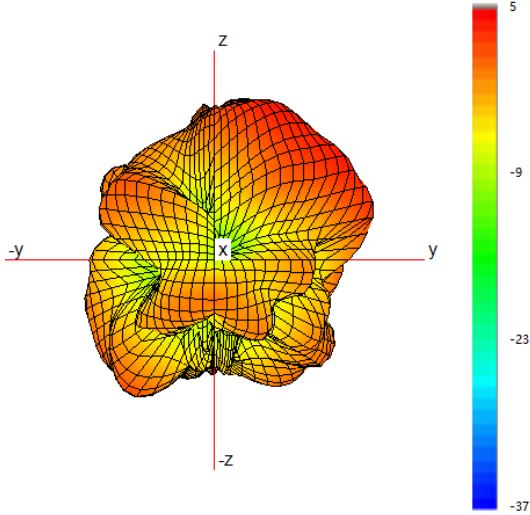


# 4x4 MiMo 4G/5G Case Mount Antenna

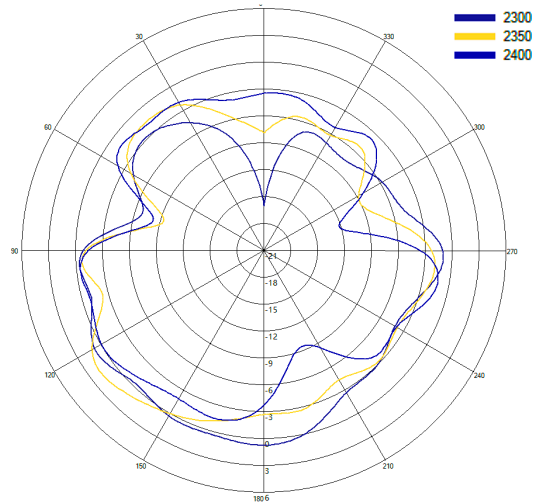
CASEANT[X]4-6-60[-X]

3D Patterns -Cell C  
Free Space - Open

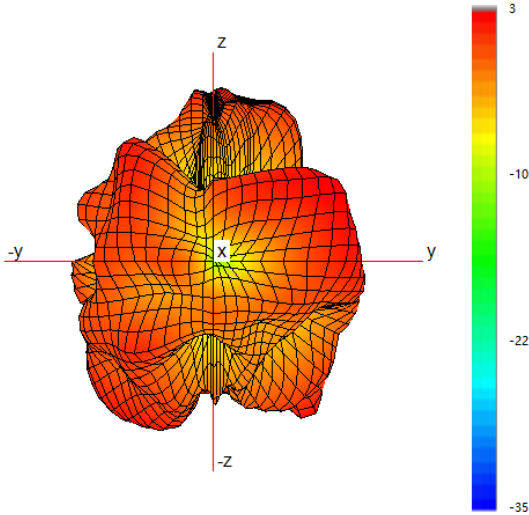
Typical 3D Pattern- Cell C - 2350 MHz



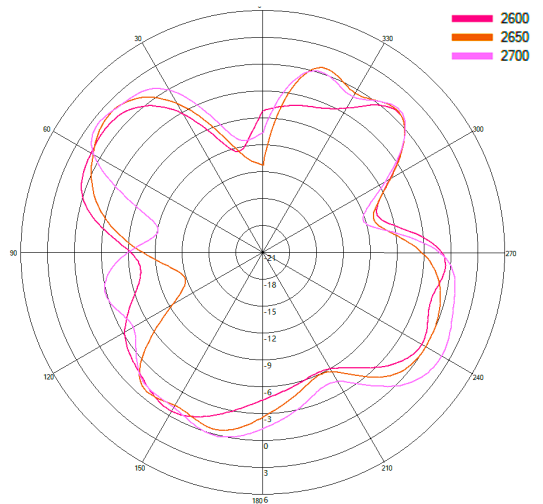
Typical H Plane- Cell C - Patterns- 2300-2400 MHz



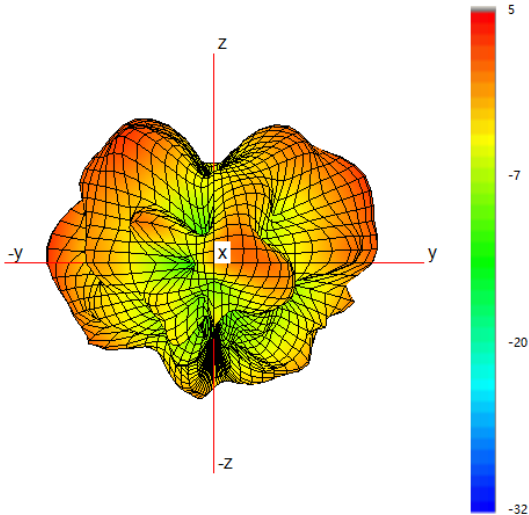
Typical 3D Pattern- Cell C - 2650 MHz



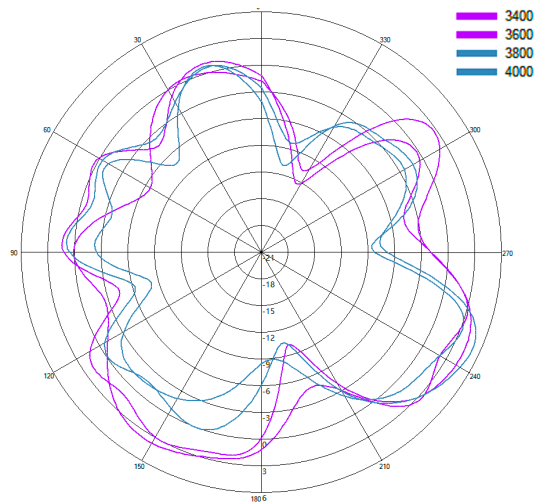
Typical H Plane- Cell C - Patterns- 2600-2700 MHz



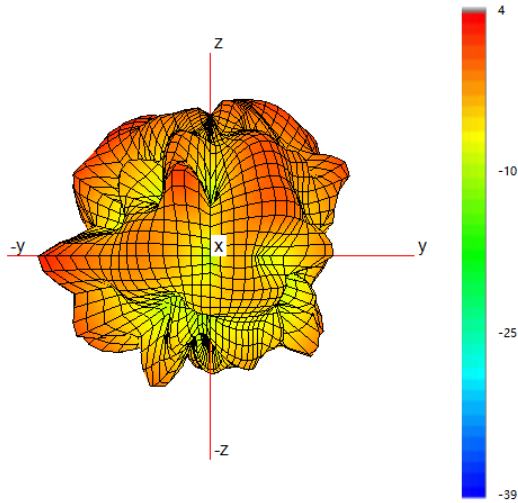
Typical 3D Pattern- Cell C - 3600 MHz



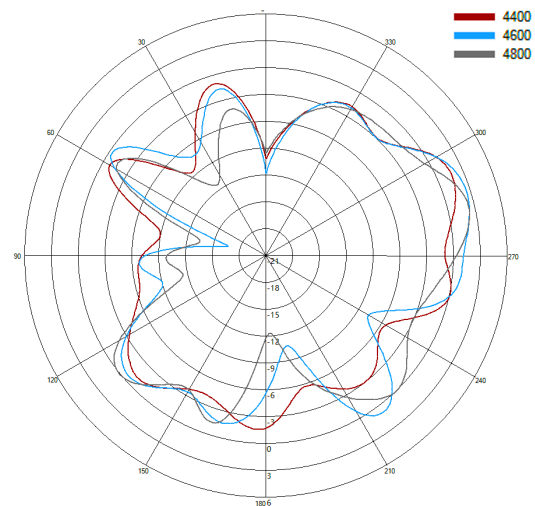
Typical H Plane- Cell C - Patterns- 3400-4000 MHz



Typical 3D Pattern- Cell C - 4700 MHz



Typical H Plane- Cell C - Patterns- 4400-4800 MHz

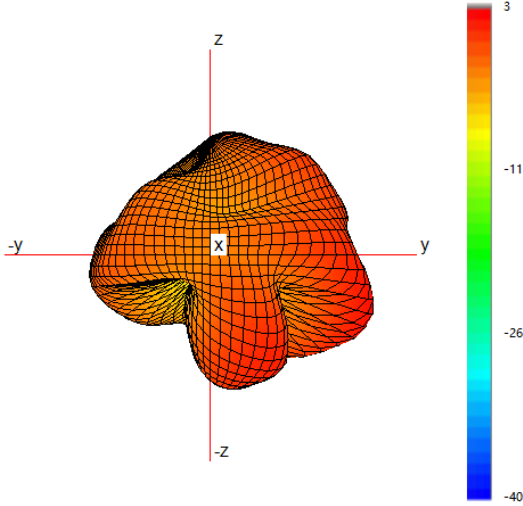


# 4x4 MiMo 4G/5G Case Mount Antenna

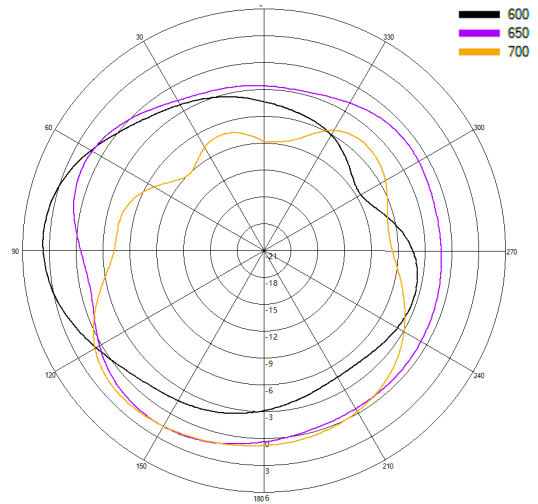
CASEANT[X]4-6-60[-X]

3D Patterns - Cell D  
Free Space - Open

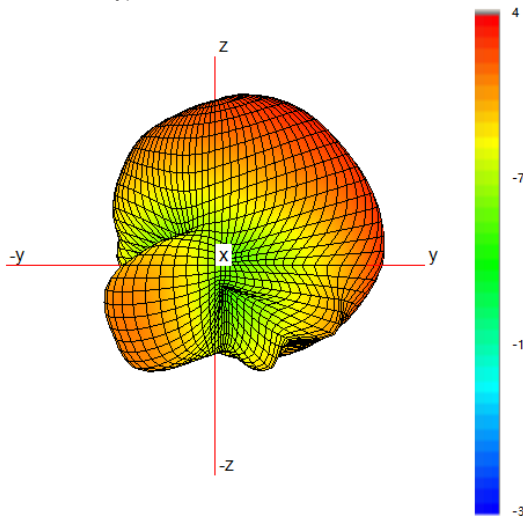
Typical 3D Pattern- Cell D - 650 MHz



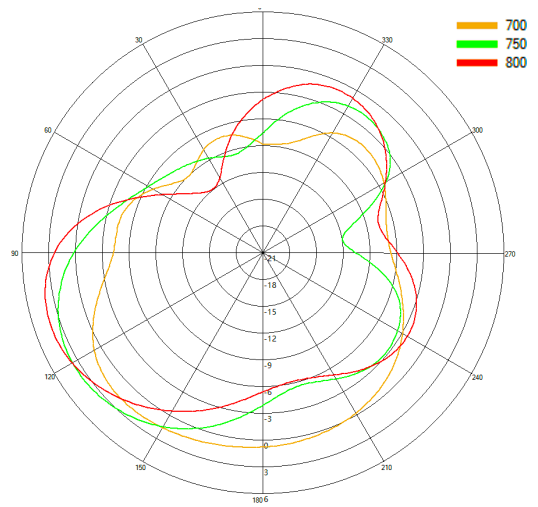
Typical H Plane- Cell D - Patterns- 600-700MHz



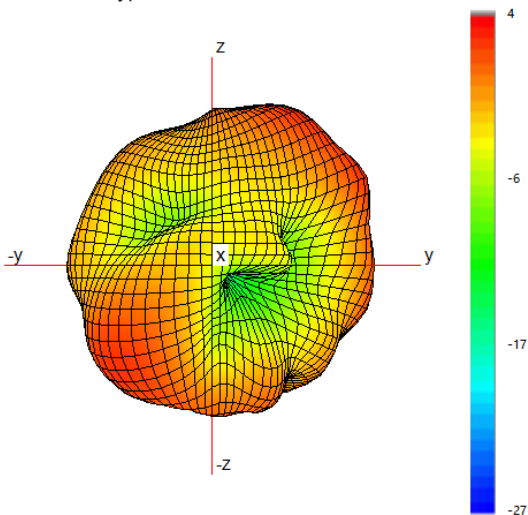
Typical 3D Pattern- Cell D - 750 MHz



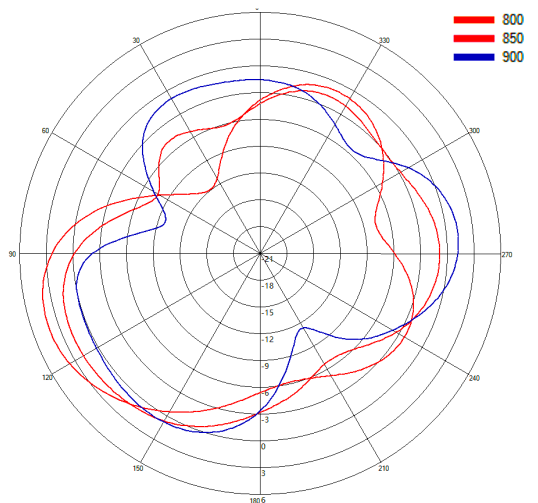
Typical H Plane- Cell D - Patterns- 700-800MHz



Typical 3D Pattern- Cell D - 850 MHz

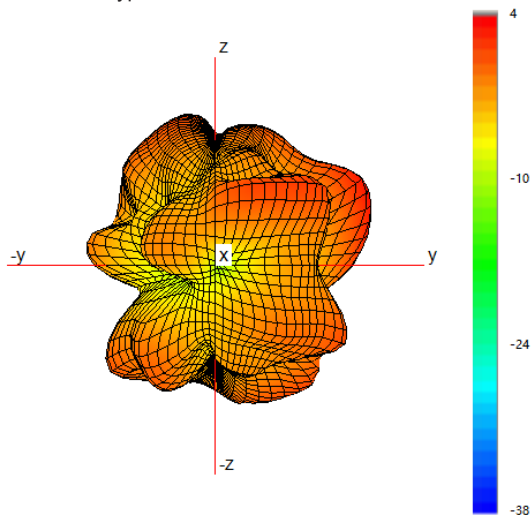


Typical H Plane- Cell D - Patterns- 800-900MHz

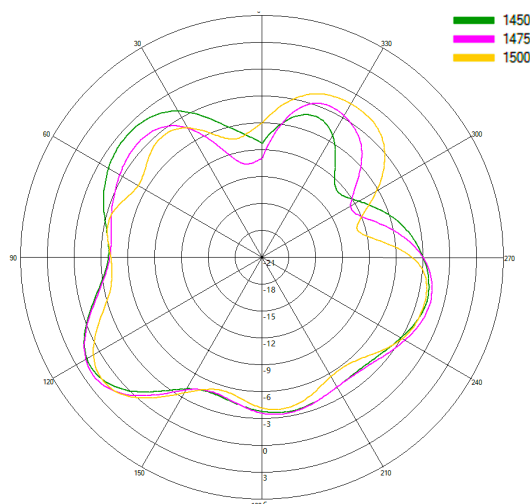


3D Patterns -Cell D  
Free Space - Open

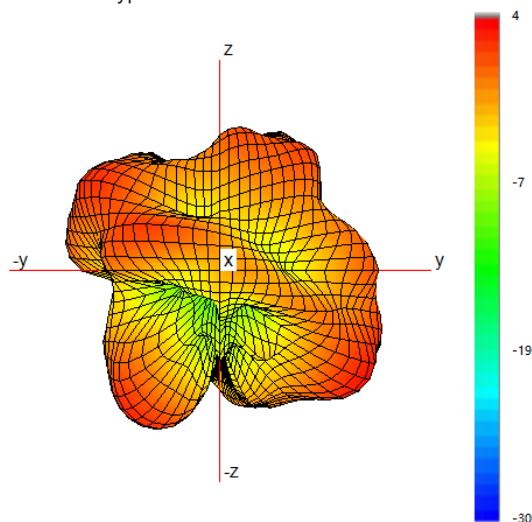
Typical 3D Pattern- Cell D - 1475 MHz



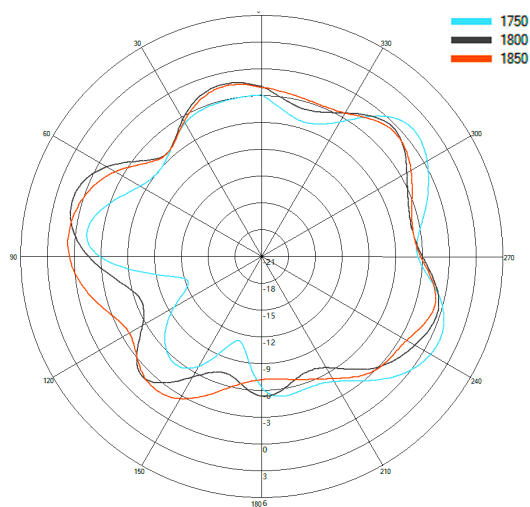
Typical H Plane- Cell D- Patterns- 1450-1500 MHz



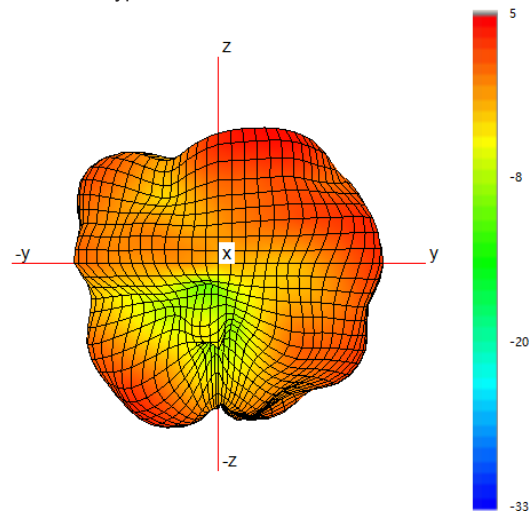
Typical 3D Pattern- Cell D - 1800 MHz



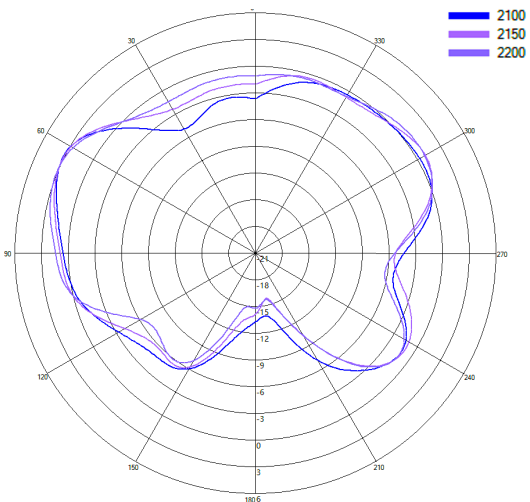
Typical H Plane- Cell D- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell D - 2150 MHz



Typical H Plane- Cell D- Patterns- 2100-2200 MHz



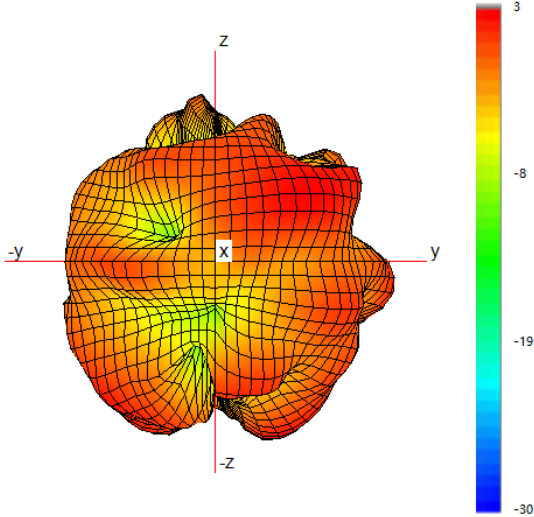
# 4x4 MiMo 4G/5G Case

## Mount Antenna

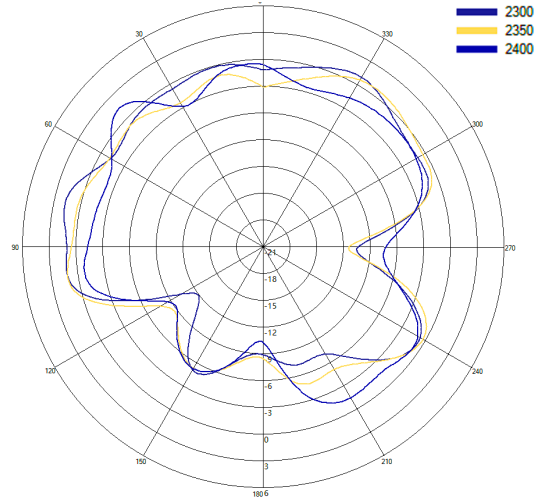
CASEANT[X]4-6-60[-X]

3D Patterns - Cell D  
Free Space - Open

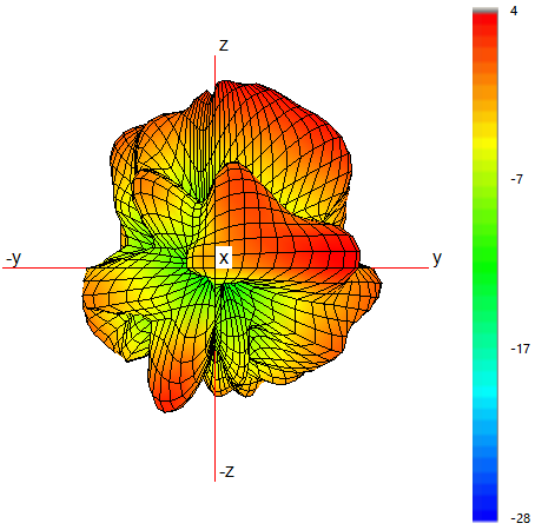
Typical 3D Pattern- Cell D - 2350 MHz



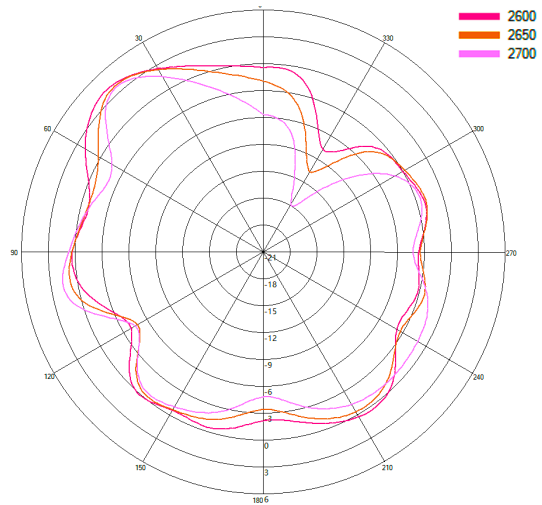
Typical H Plane- Cell D - Patterns- 2300-2400 MHz



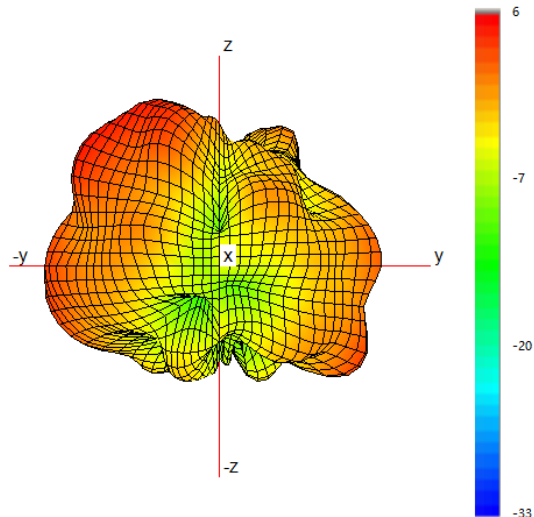
Typical 3D Pattern- Cell D - 2650 MHz



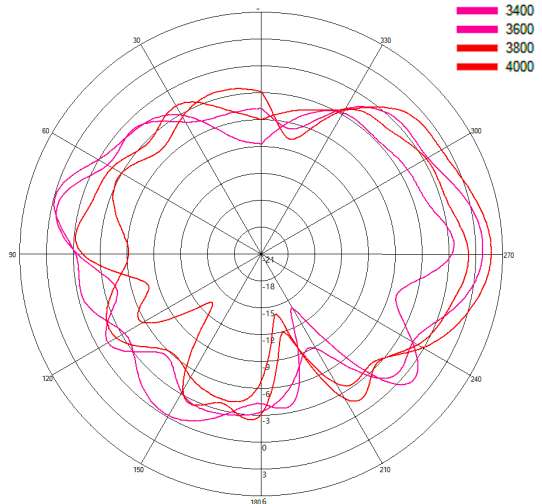
Typical H Plane- Cell D - Patterns- 2600-2700 MHz



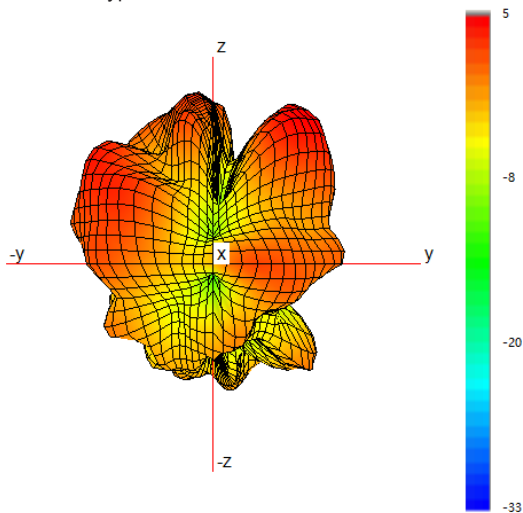
Typical 3D Pattern- Cell D - 3600 MHz



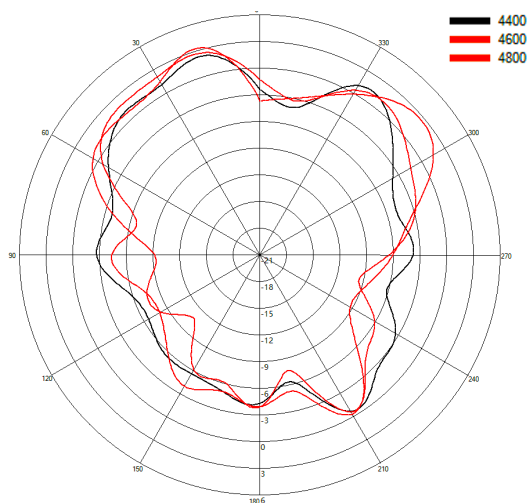
Typical H Plane- Cell D - Patterns- 3400-4000 MHz



Typical 3D Pattern- Cell D - 4700 MHz



Typical H Plane- Cell D - Patterns- 4400-4800 MHz





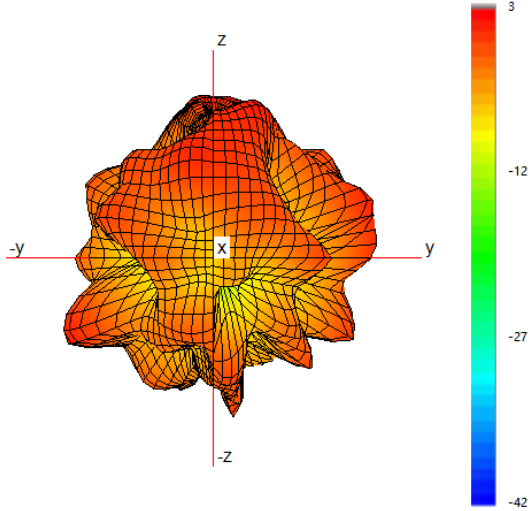
# 4x4 MiMo 4G/5G Case

## Mount Antenna

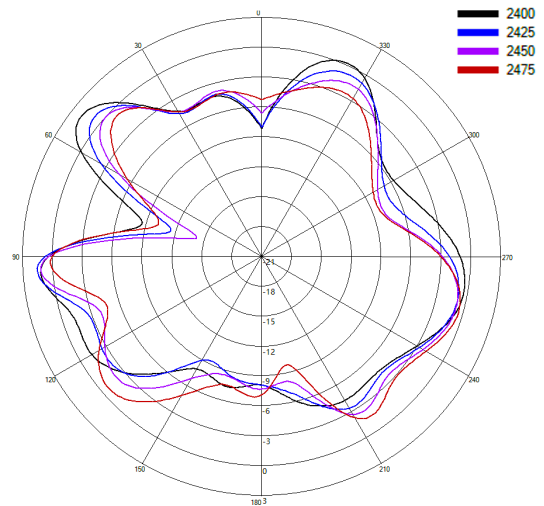
CASEANT[X]4-6-60[-X]

3D Patterns -WiFi-1  
Free Space - Open

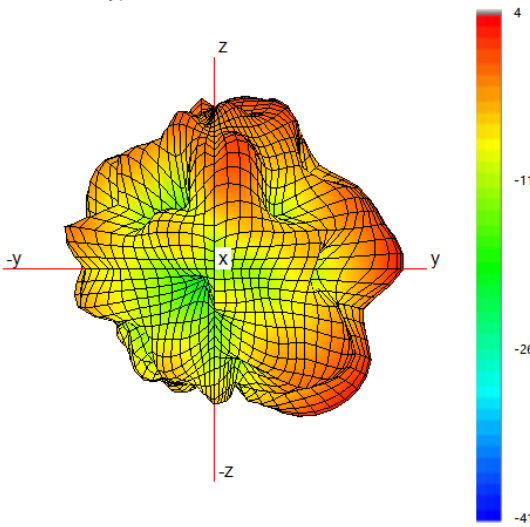
Typical 3D Pattern- WiFi - 1 - 2450 MHz



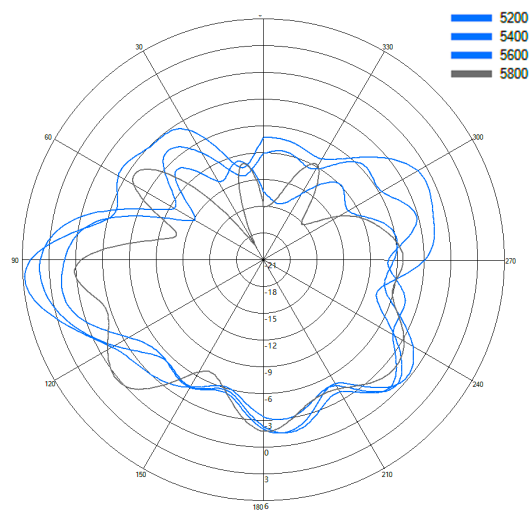
Typical H Plane- WiFi - 1 - Patterns- 2400-2475MHz



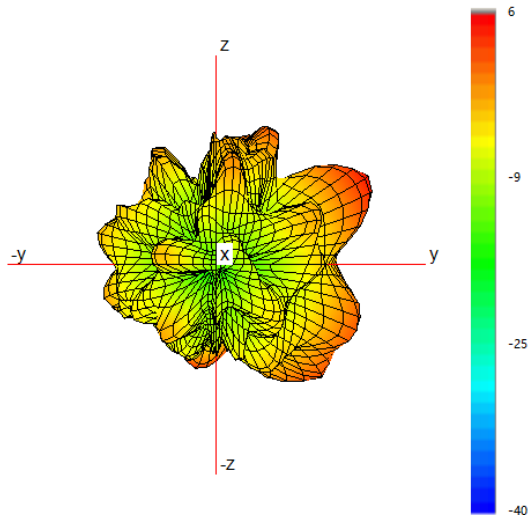
Typical 3D Pattern- WiFi - 1 - 5500 MHz



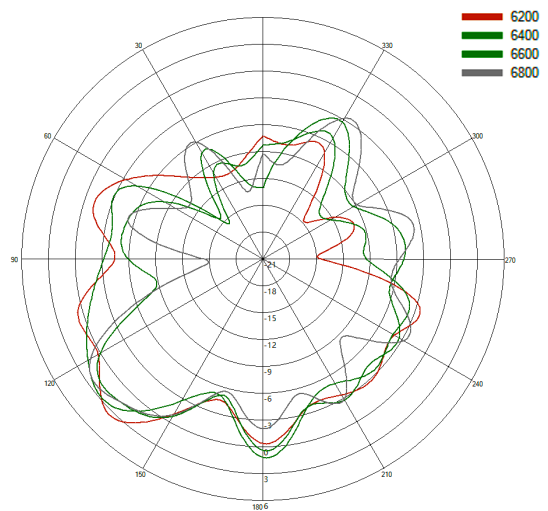
Typical H Plane- WiFi - 1 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 1 - 6500 MHz

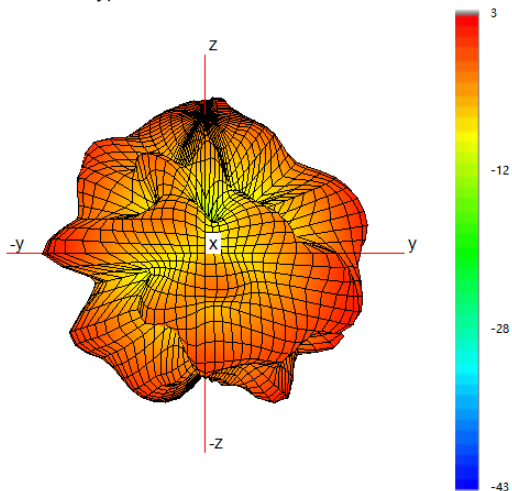


Typical H Plane- WiFi - 1 - Patterns- 6200-6800MHz

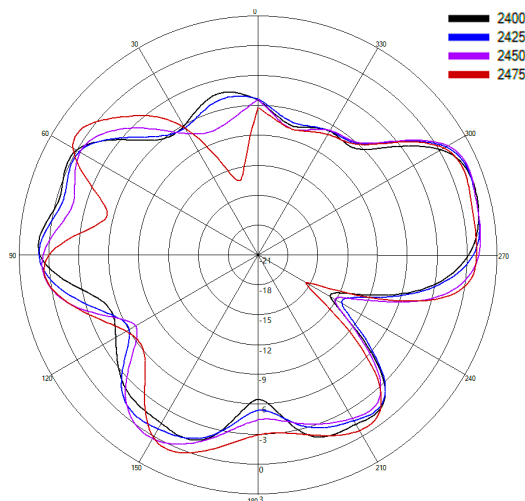


3D Patterns -WiFi-2  
Free Space - Open

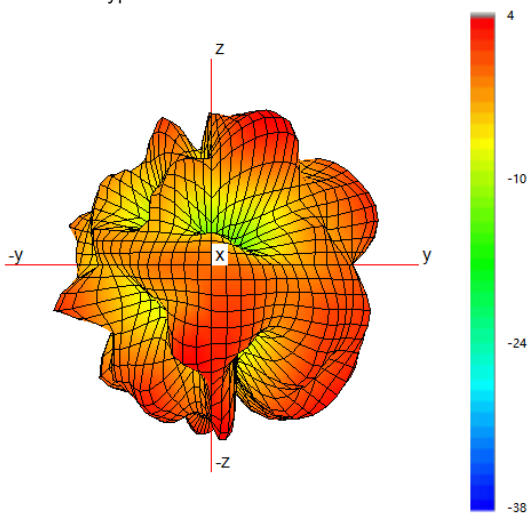
Typical 3D Pattern- WiFi - 2 - 2450 MHz



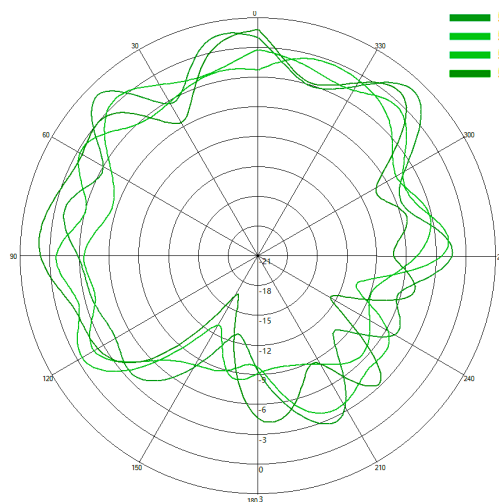
Typical H Plane- WiFi - 2 - Patterns- 2400-2475MHz



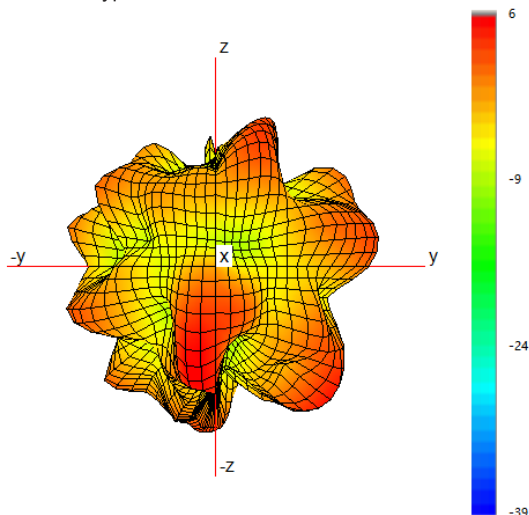
Typical 3D Pattern- WiFi - 2 - 5500 MHz



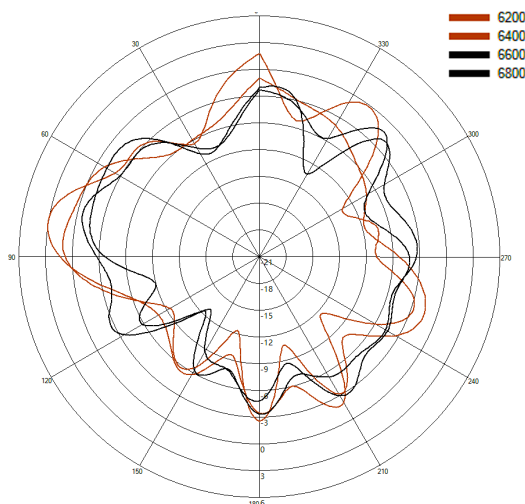
Typical H Plane- WiFi - 2 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 2 - 6500 MHz



Typical H Plane- WiFi - 2 - Patterns- 6200-6800MHz

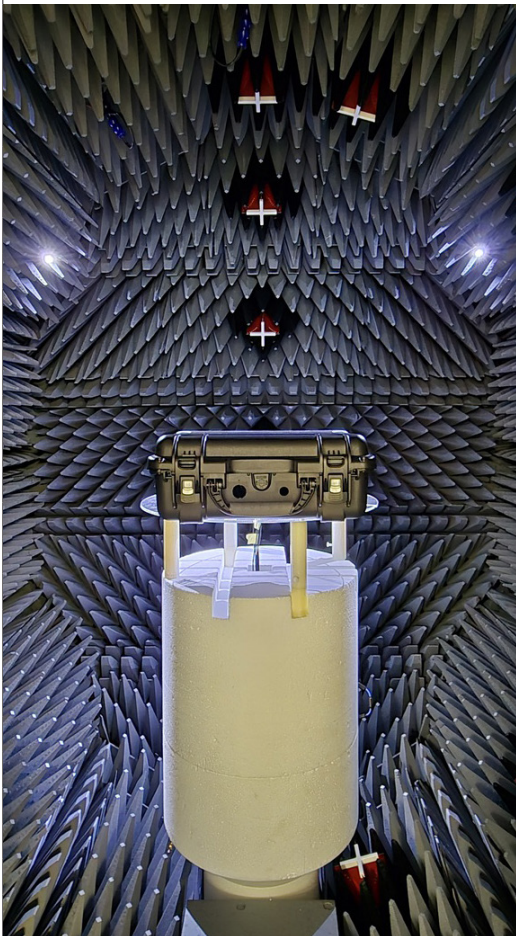


# 4x4 MiMo 4G/5G Case

## Mount Antenna

CASEANT[X]4-6-60[-X]

Electrical Data- Cell  
- Closed

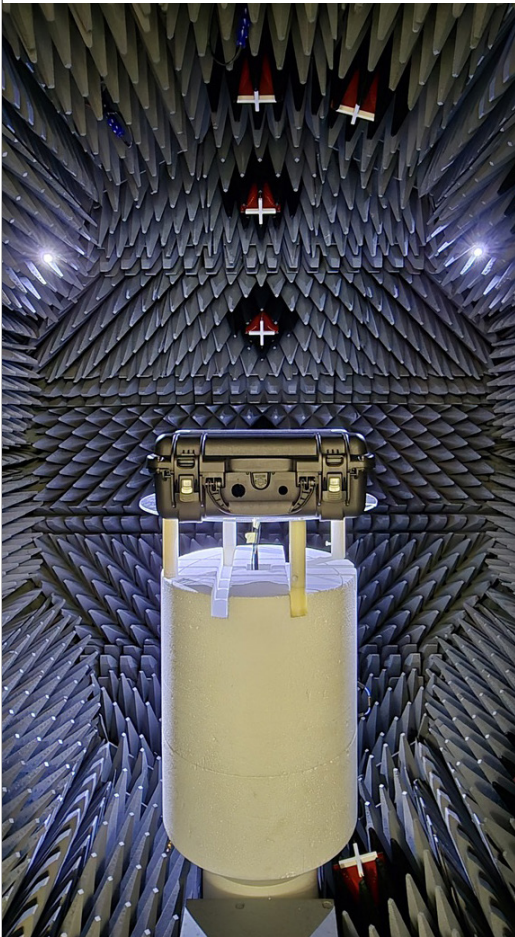
Measurement Conditions	4G/5G Antennas				
Results provided based on version of product with 2 WiFi measured mounted in a closed hard case in free space with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	617-698	71	Cell A	5.7	55
			Cell B	6.0	60
			Cell C	5.6	49
			Cell D	3.0	60
	699-798	12,13, 14 17,28	Cell A	5.9	63
			Cell B	7.7	59
			Cell C	4.0	45
			Cell D	7.5	60
	807- 862	5,19,20,26,27	Cell A	4.7	60
			Cell B	7.7	56
			Cell C	4.0	51
			Cell D	5.1	65
	880-960	8	Cell A	4.7	59
			Cell B	5.3	59
			Cell C	2.5	54
			Cell D	6.2	61
	1427-1518	11, 21, 74,75,76	Cell A	3.7	53
			Cell B	2.2	56
			Cell C	3.0	62
			Cell D	6.2	64
	1710-1920	2,3,4,9,25,35, 39,66	Cell A	4.8	61
			Cell B	3.3	58
			Cell C	3.4	57
			Cell D	5.7	58
	1920-2170	1,23	Cell A	5.9	64
			Cell B	3.5	63
			Cell C	3.7	66
			Cell D	4.3	67
2300-2400	30,40	Cell A	4.3	54	
		Cell B	3.1	50	
		Cell C	3.0	69	
		Cell D	3.8	66	
2496-2690	7,38,41	Cell A	6.6	59	
		Cell B	3.8	49	
		Cell C	4.4	67	
		Cell D	4.5	67	
3300-4200	22,42,43,48,77, 78,79	Cell A	5.2	62	
		Cell B	4.9	62	
		Cell C	5.7	64	
		Cell D	6.6	66	
4400-5000	79	Cell A	3.8	58	
		Cell B	5.2	63	
		Cell C	4.9	64	
		Cell D	6.2	63	

# 4x4 MiMo 4G/5G Case

## Mount Antenna

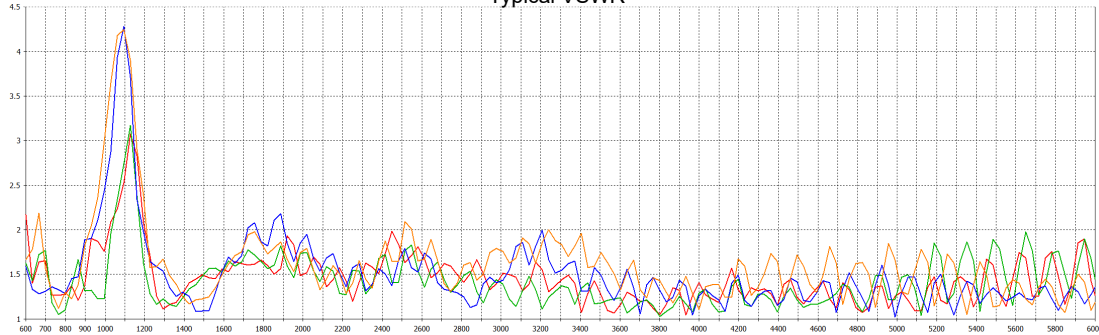
CASEANT[X]4-6-60[-X]

Electrical Data - WiFi  
- Closed

Measurement Conditions	WiFi Antennas				
Results provided based on version of product with 2 WiFi measured mounted in a closed hard case in free space with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	2396-2485	2.4GHz	WiFi 1	4.1	57
			WiFi 2	5.6	57
	5150-5250	UNII-1	WiFi 1	4.9	63
			WiFi 2	6.1	62
	5250-5350	UNII-2A	WiFi 1	4.7	61
			WiFi 2	5.4	62
	5350-5470	UNII-2B	WiFi 1	4.4	61
			WiFi 2	5.3	64
	5470-5725	UNII-2C	WiFi 1	4.7	62
			WiFi 2	6.1	64
	5725-5850	UNII-3	WiFi 1	4.8	60
			WiFi 2	6.1	64
	5850-5925	UNII-4	WiFi 1	5.0	58
			WiFi 2	6.3	61
	5925-6425	UNII-5	WiFi 1	6.3	58
			WiFi 2	7.1	60
6425-6525	UNII-6	WiFi 1	6.3	58	
		WiFi 2	6.3	60	
6525-6875	UNII-7	WiFi 1	6.1	55	
		WiFi 2	6.4	59	
6875-7125	UNII-8	WiFi 1	5.5	53	
		WiFi 2	6.8	60	

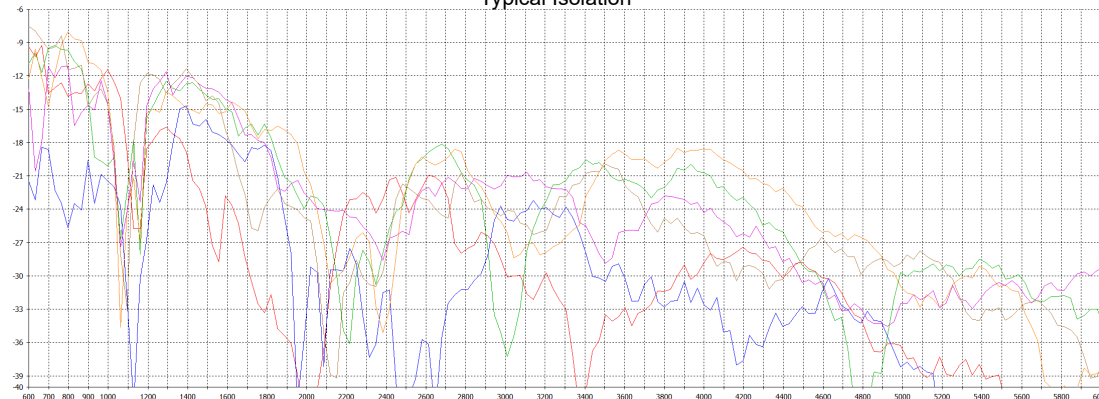
Electrical Data- Cell  
Free Space - Closed

Typical VSWR \*



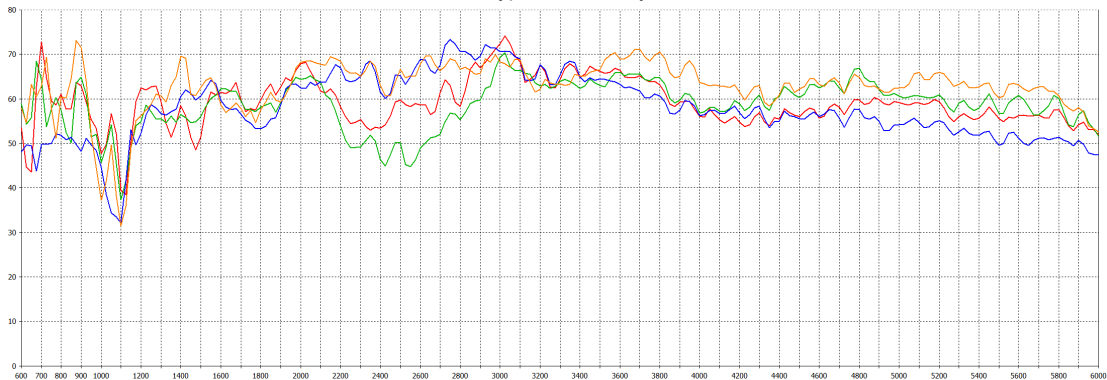
\*VSWR measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

Typical Isolation \*



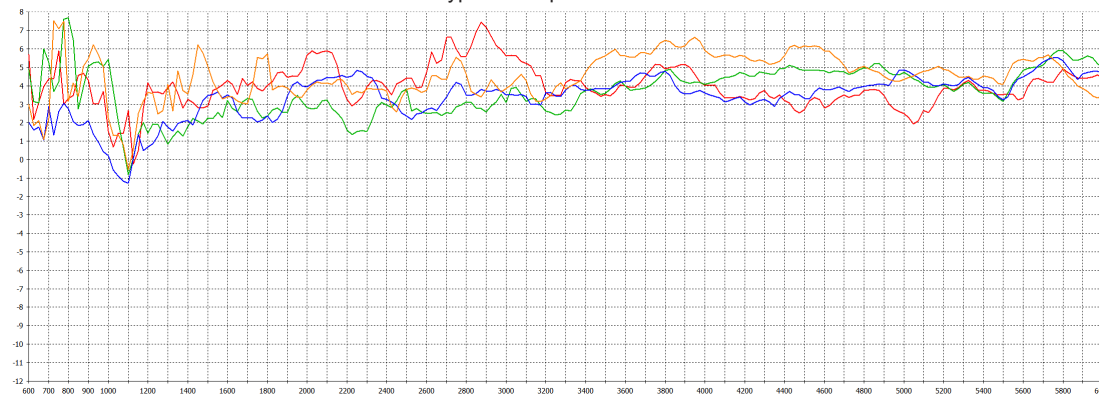
\*Isolation measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

Typical Efficiency\*



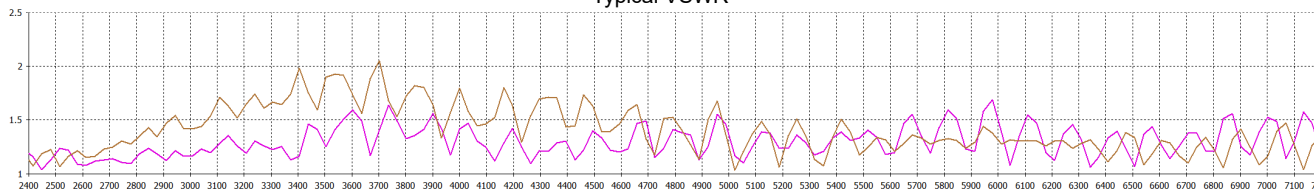
\*Efficiency measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain\*



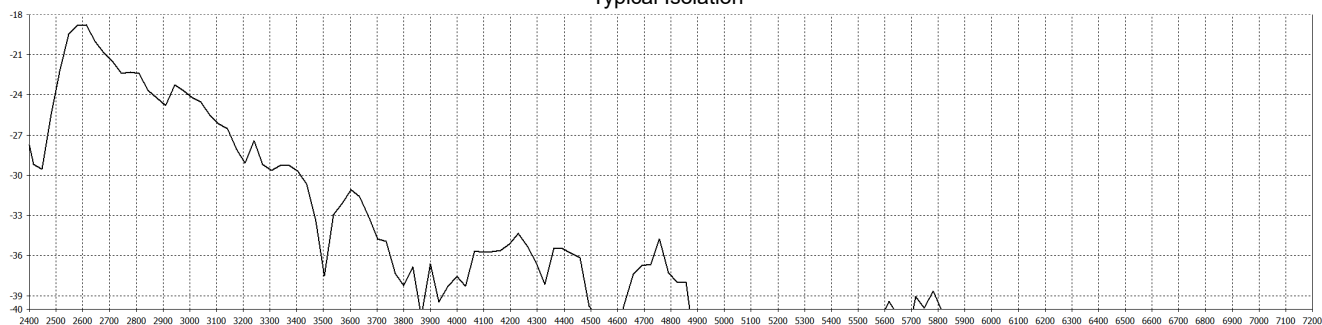
\*Peak Gain measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

Typical VSWR \*



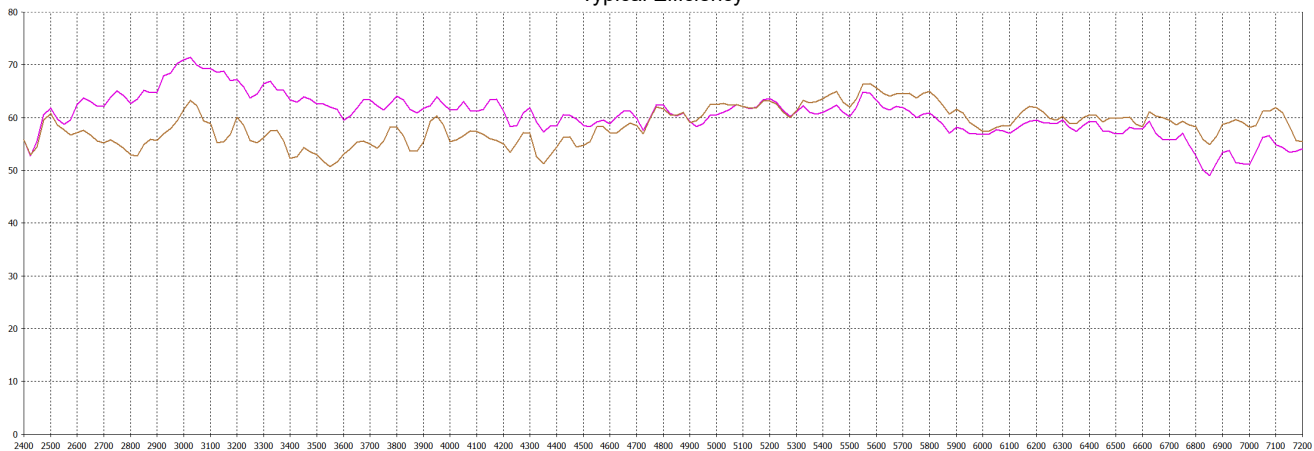
\*VSWR measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

Typical Isolation \*



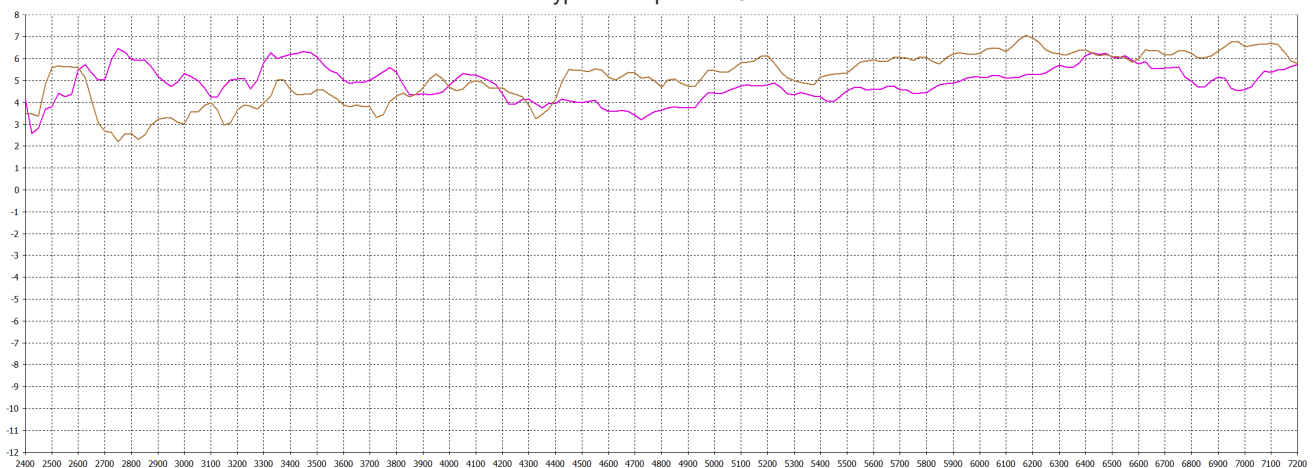
\*Isolation measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

Typical Efficiency\*



\*Efficiency measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain\*



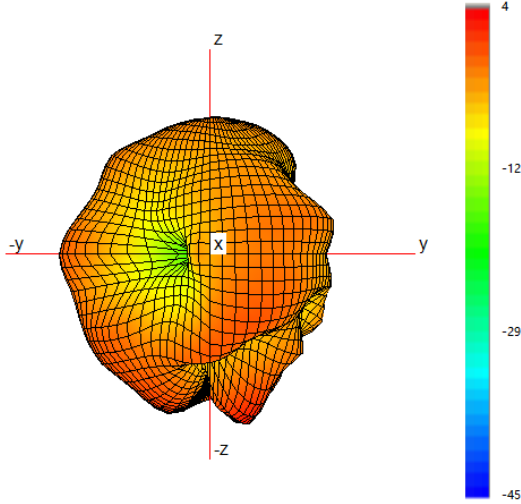
\*Peak Gain measured mounted in a closed hard case in free space with 0.5m (1.6') of CS30 cable

# 4x4 MiMo 4G/5G Case Mount Antenna

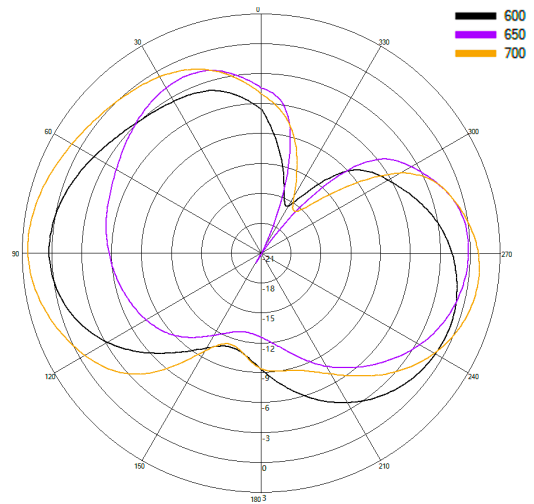
CASEANT[X]4-6-60[-X]

3D Patterns -Cell A  
Free Space - Closed

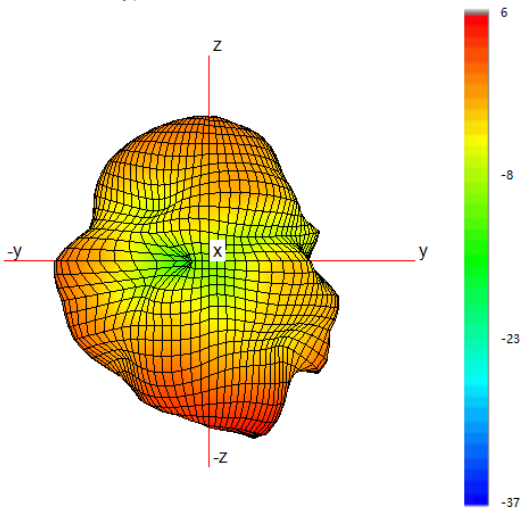
Typical 3D Pattern- Cell A - 650 MHz



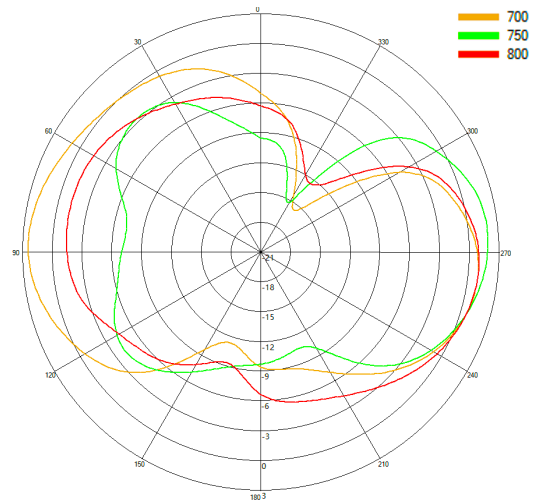
Typical H Plane- Cell A - Patterns- 600-700MHz



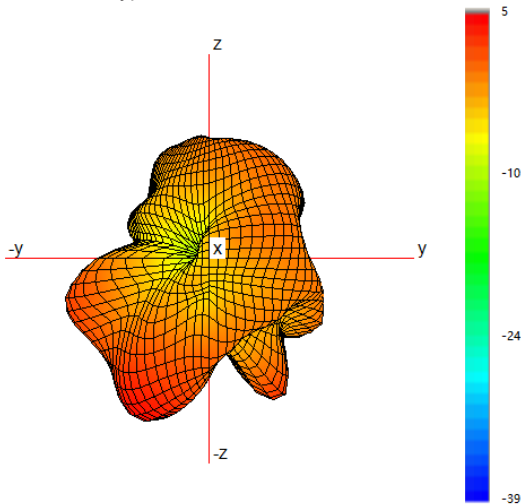
Typical 3D Pattern- Cell A - 750 MHz



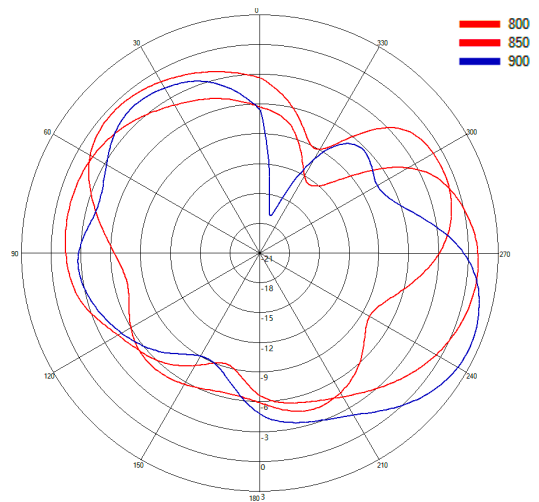
Typical H Plane- Cell A - Patterns- 700-800MHz



Typical 3D Pattern- Cell A - 850 MHz

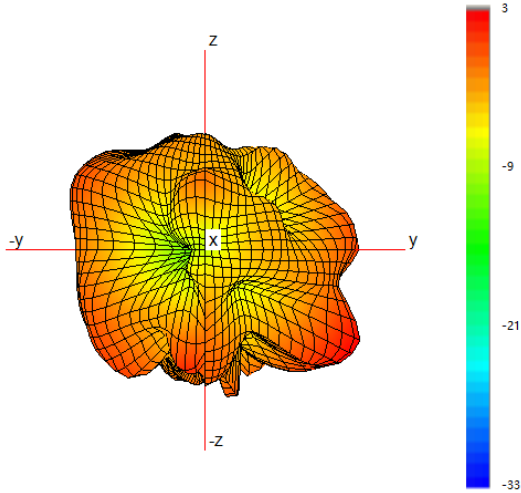


Typical H Plane- Cell A - Patterns- 800-900MHz

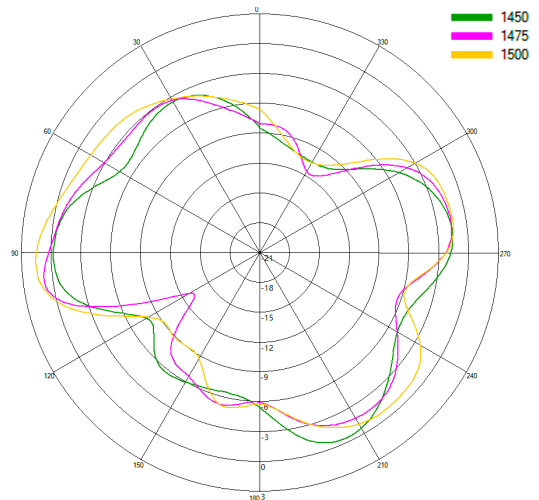


3D Patterns -Cell A  
Free Space - Closed

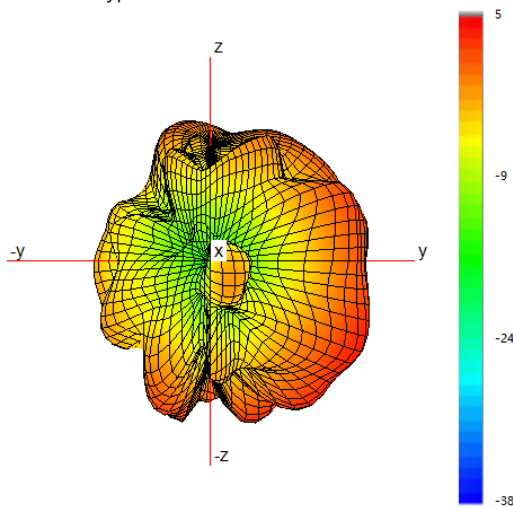
Typical 3D Pattern- Cell A - 1475 MHz



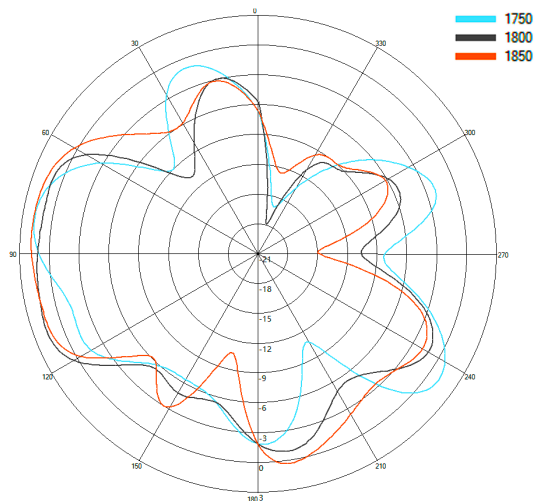
Typical H Plane- Cell A- Patterns- 1450-1500 MHz



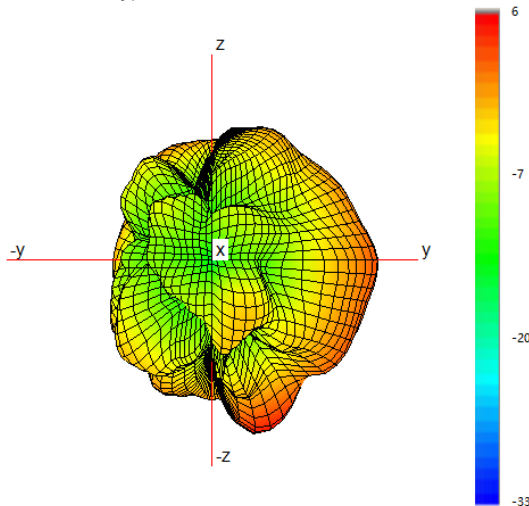
Typical 3D Pattern- Cell A - 1800 MHz



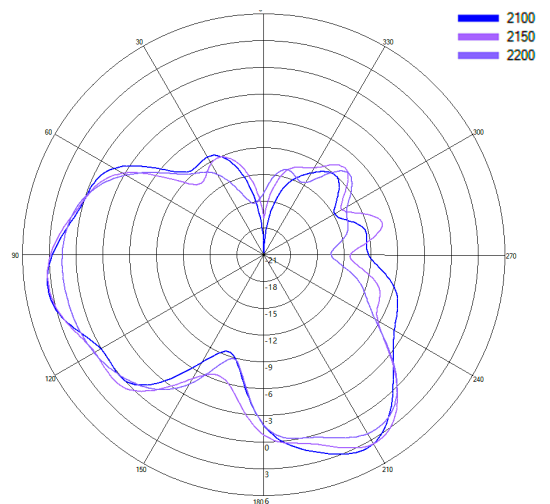
Typical H Plane- Cell A- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell A - 2150 MHz



Typical H Plane- Cell A- Patterns- 2100-2200 MHz





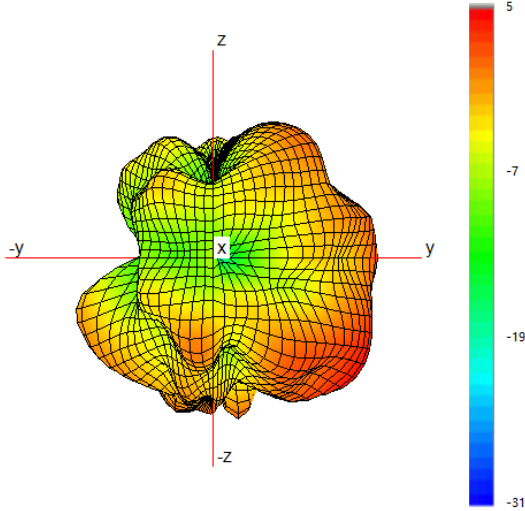
# 4x4 MiMo 4G/5G Case

## Mount Antenna

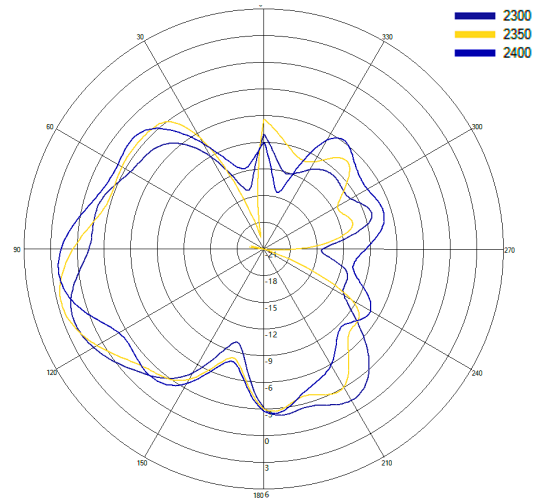
CASEANT[X]4-6-60[-X]

3D Patterns - Cell A  
Free Space - Closed

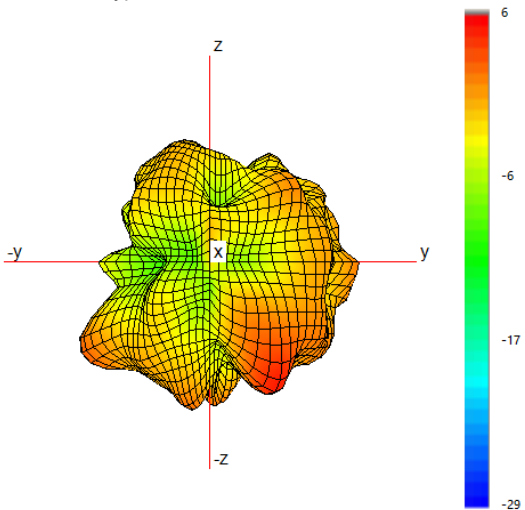
Typical 3D Pattern- Cell A - 2350 MHz



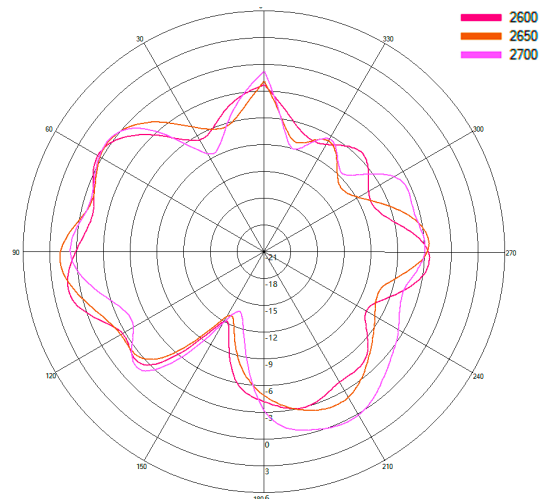
Typical H Plane- Cell A - Patterns- 2300-2400 MHz



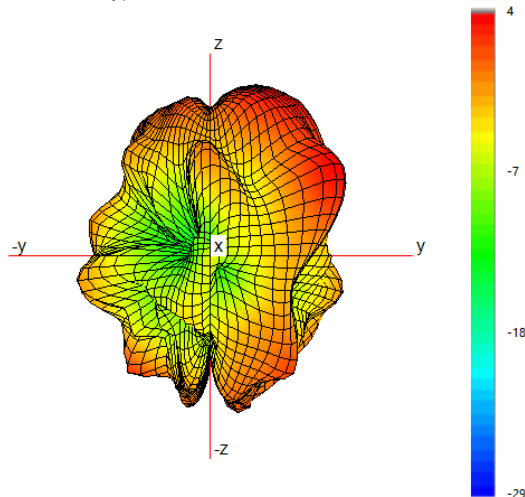
Typical 3D Pattern- Cell A - 2650 MHz



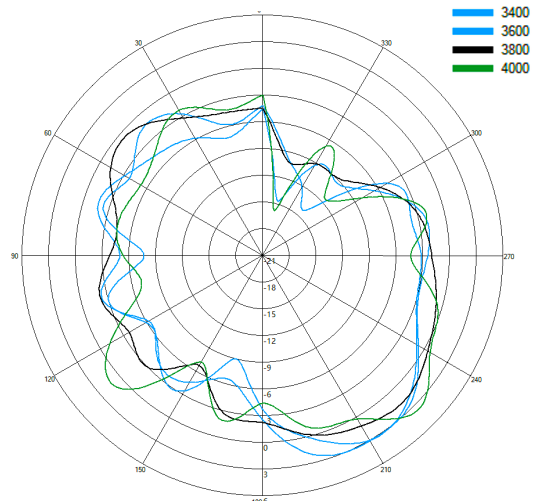
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz

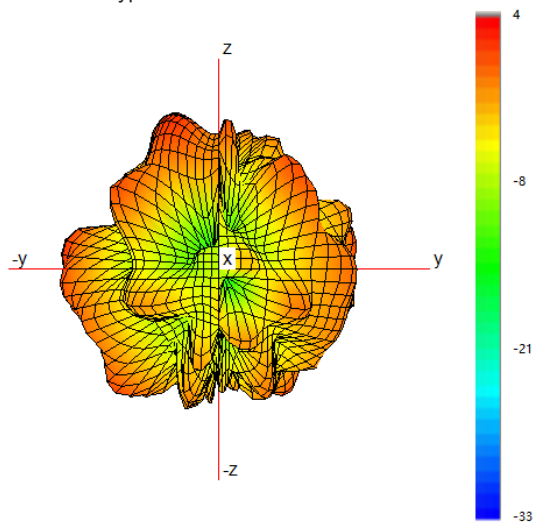


Typical H Plane- Cell A - Patterns- 3400-4000 MHz

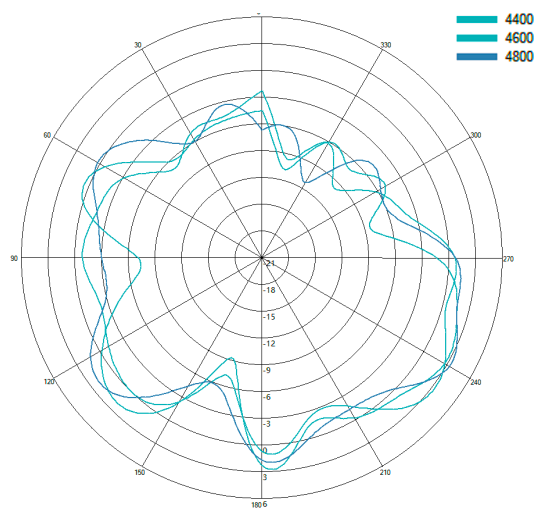


3D Patterns -Cell A  
Free Space - Closed

Typical 3D Pattern- Cell A - 4700 MHz



Typical H Plane- Cell A - Patterns- 4400-4800 MHz



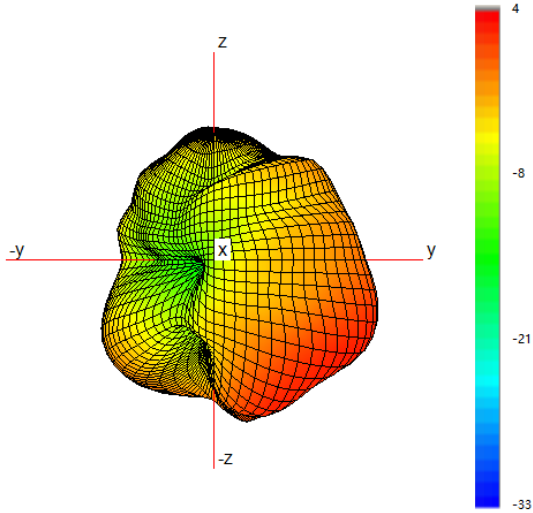
# 4x4 MiMo 4G/5G Case

## Mount Antenna

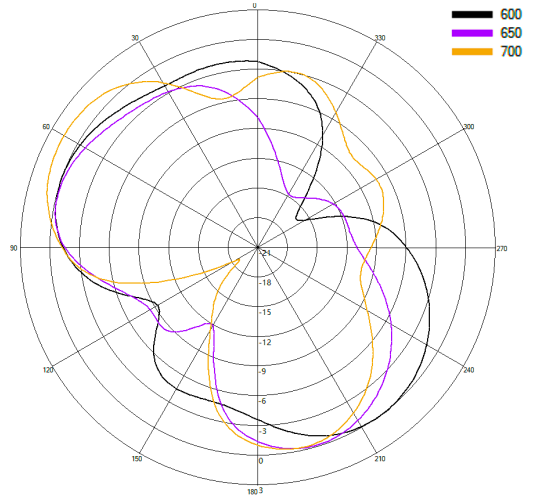
CASEANT[X]4-6-60[-X]

3D Patterns - Cell B  
Free Space - Closed

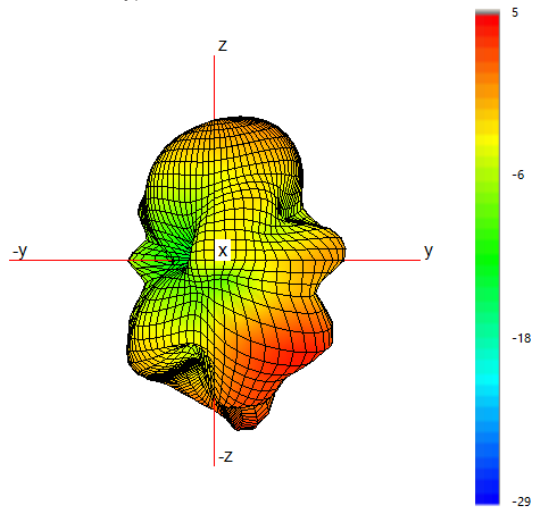
Typical 3D Pattern- Cell B - 650 MHz



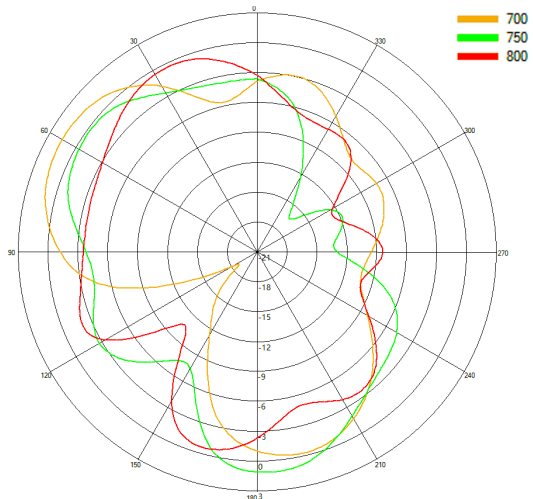
Typical H Plane- Cell B - Patterns- 600-700MHz



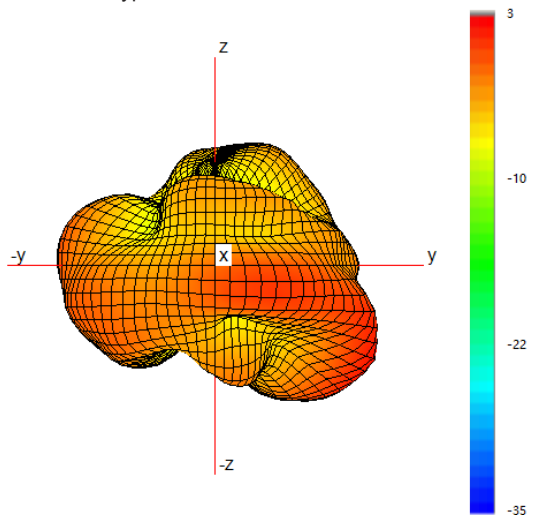
Typical 3D Pattern- Cell B - 750 MHz



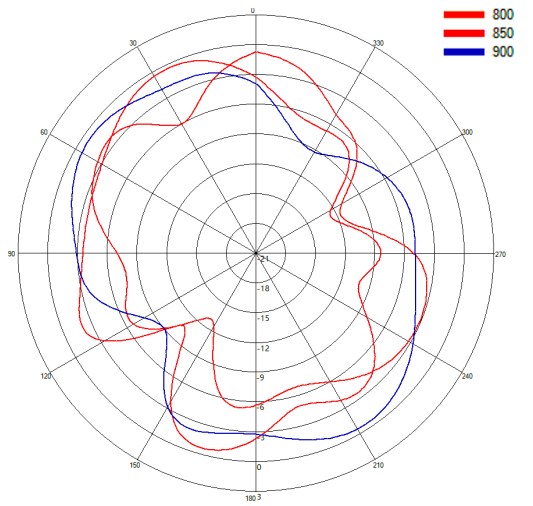
Typical H Plane- Cell B - Patterns- 700-800MHz



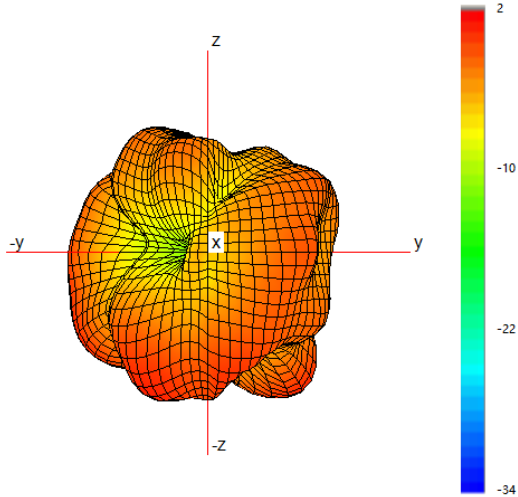
Typical 3D Pattern- Cell B - 850 MHz



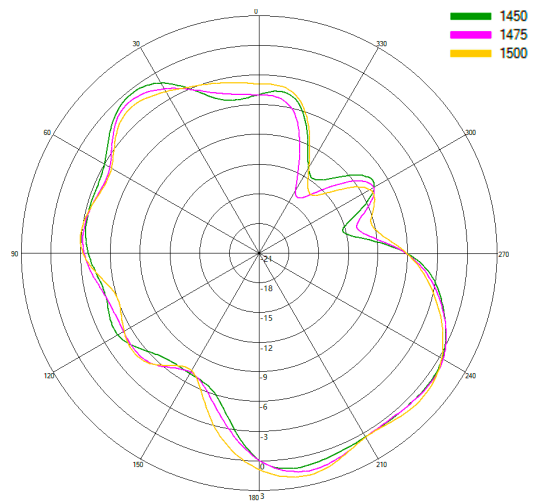
Typical H Plane- Cell B - Patterns- 800-900MHz



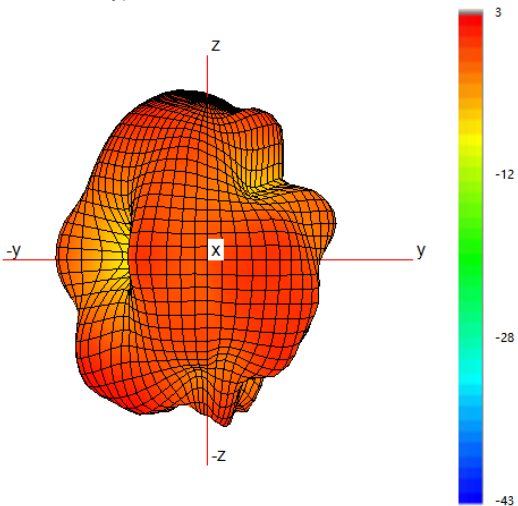
Typical 3D Pattern- Cell B - 1475 MHz



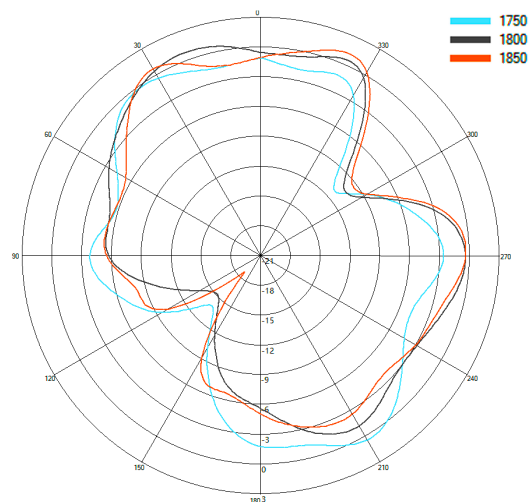
Typical H Plane- Cell B- Patterns- 1450-1500 MHz



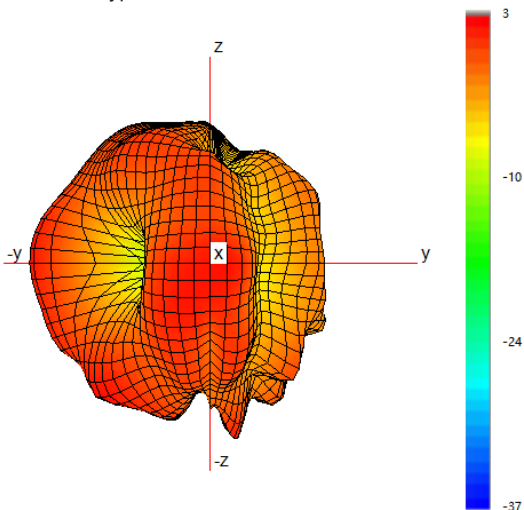
Typical 3D Pattern- Cell B - 1800 MHz



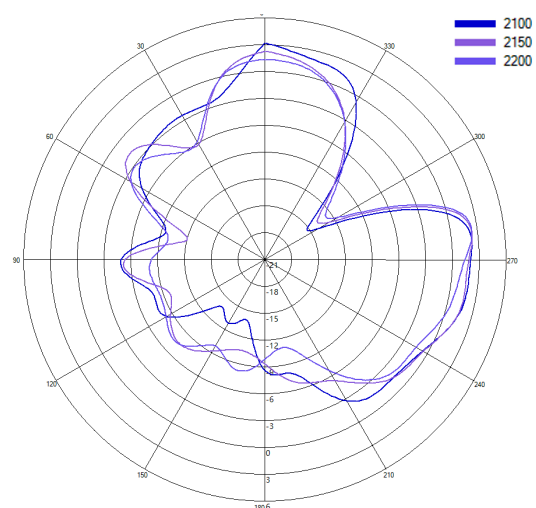
Typical H Plane- Cell B- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell B - 2150 MHz



Typical H Plane- Cell B- Patterns- 2100-2200 MHz

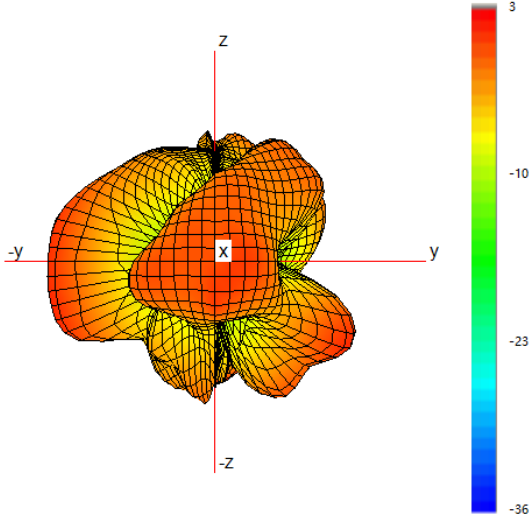


# 4x4 MiMo 4G/5G Case Mount Antenna

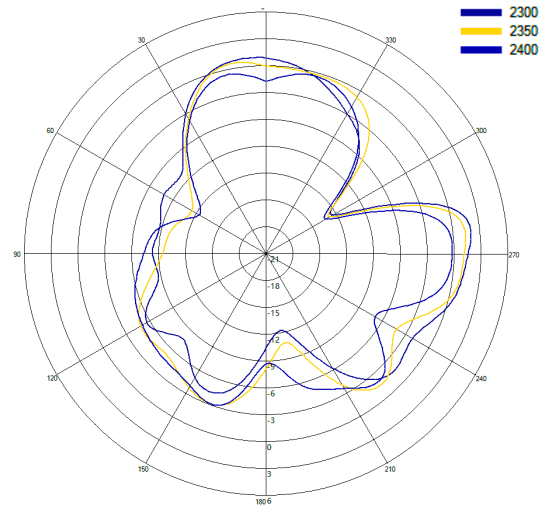
CASEANT[X]4-6-60[-X]

3D Patterns -Cell B  
Free Space - Closed

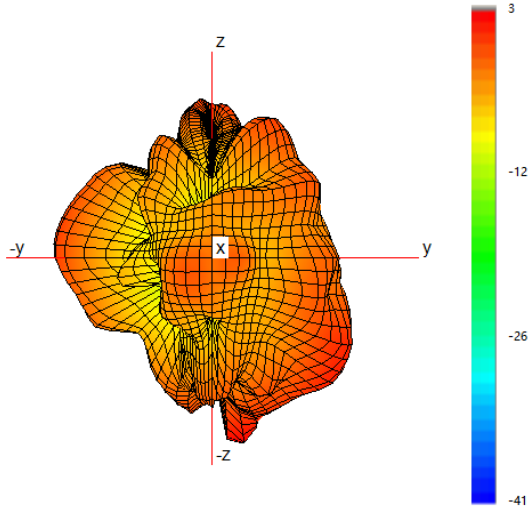
Typical 3D Pattern- Cell B - 2350 MHz



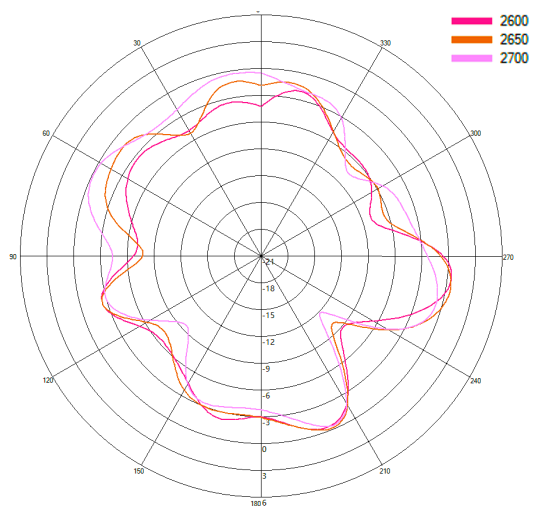
Typical H Plane- Cell B - Patterns- 2300-2400 MHz



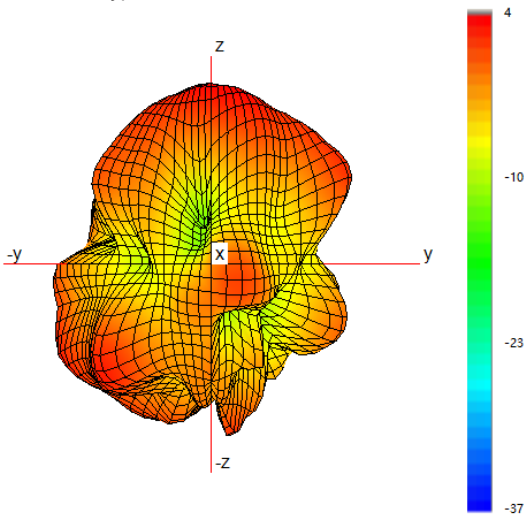
Typical 3D Pattern- Cell B - 2650 MHz



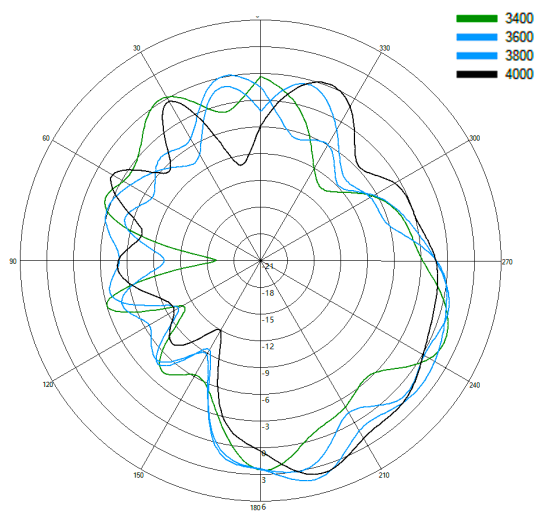
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



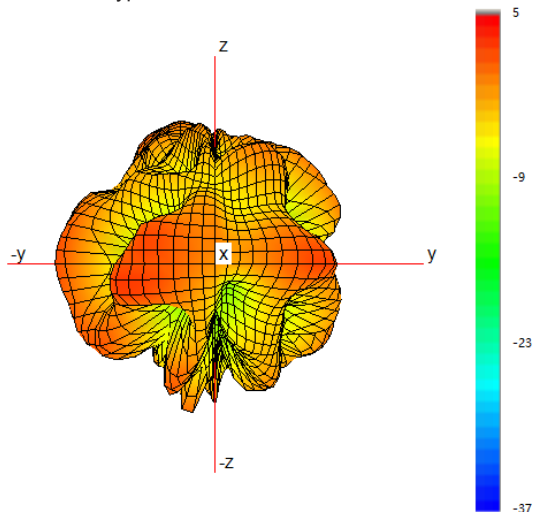
Typical 3D Pattern- Cell B - 3600 MHz



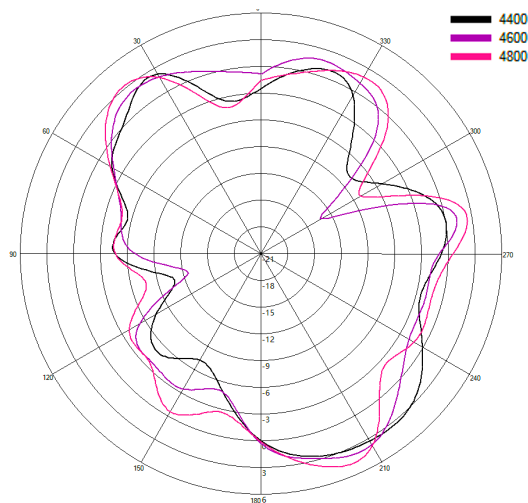
Typical H Plane- Cell B - Patterns- 3400-4000 MHz



Typical 3D Pattern- Cell B - 4700 MHz



Typical H Plane- Cell B - Patterns- 4400-4800 MHz



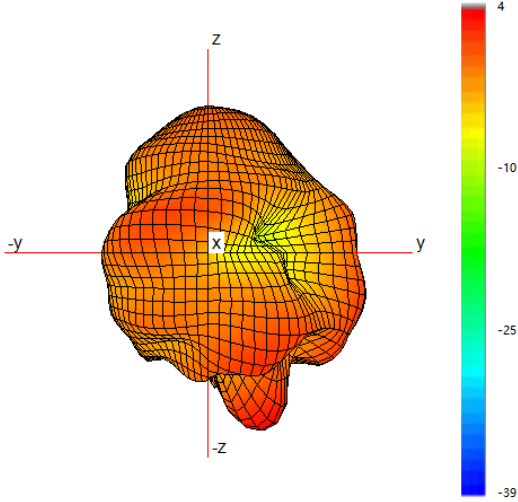
# 4x4 MiMo 4G/5G Case

## Mount Antenna

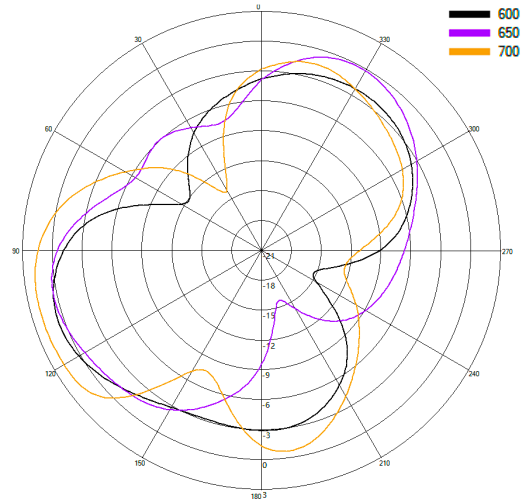
CASEANT[X]4-6-60[-X]

3D Patterns - Cell C  
Free Space - Closed

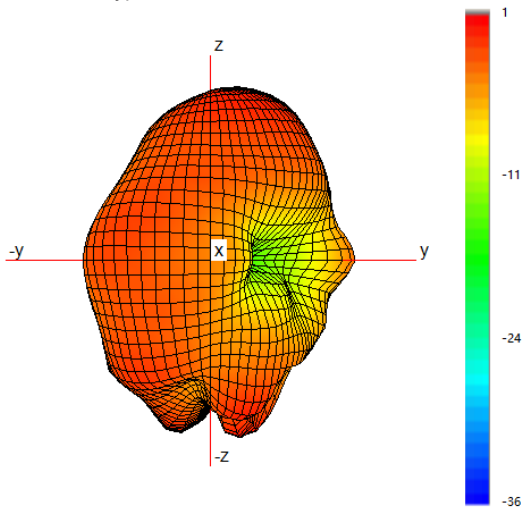
Typical 3D Pattern- Cell C - 650 MHz



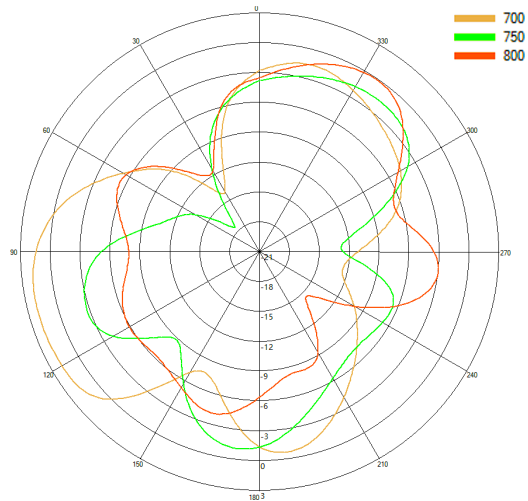
Typical H Plane- Cell C - Patterns- 600-700MHz



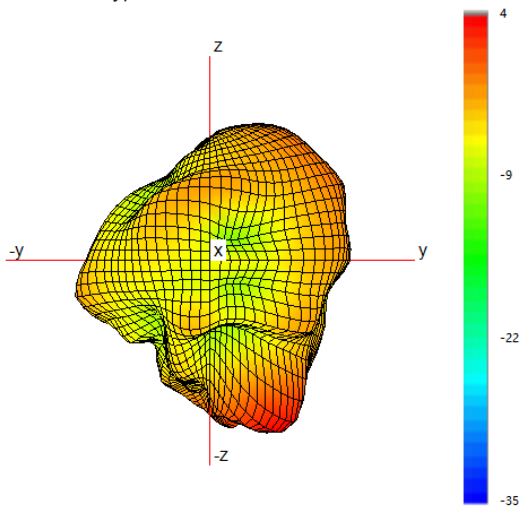
Typical 3D Pattern- Cell C - 750 MHz



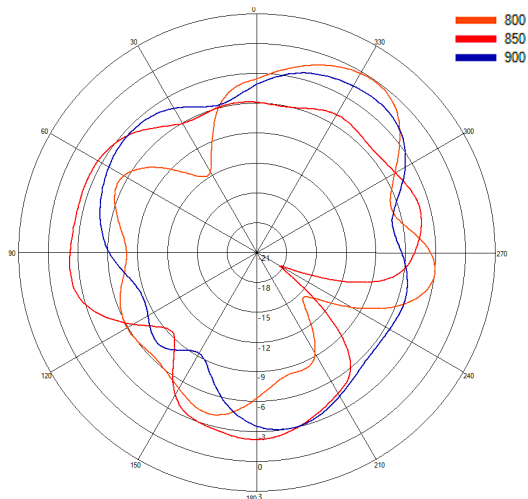
Typical H Plane- Cell C - Patterns- 700-800MHz



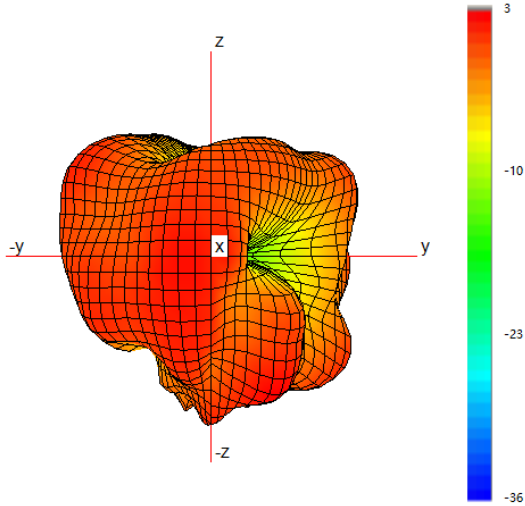
Typical 3D Pattern- Cell C - 850 MHz



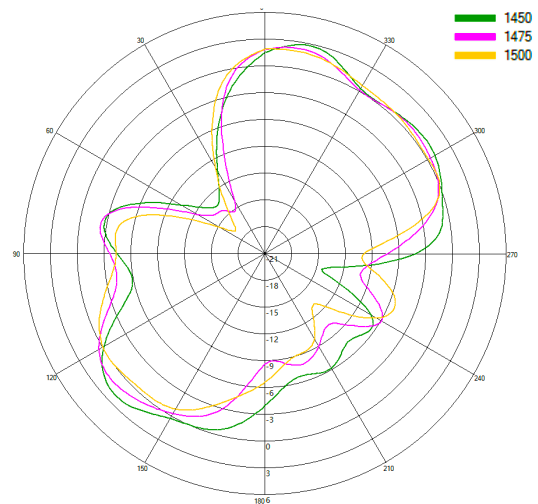
Typical H Plane- Cell C - Patterns- 800-900MHz



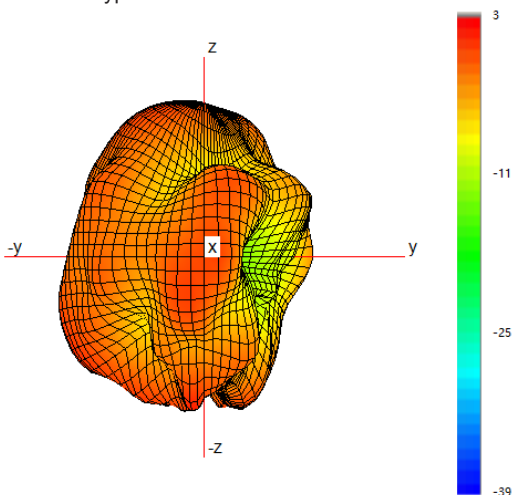
Typical 3D Pattern- Cell C - 1475 MHz



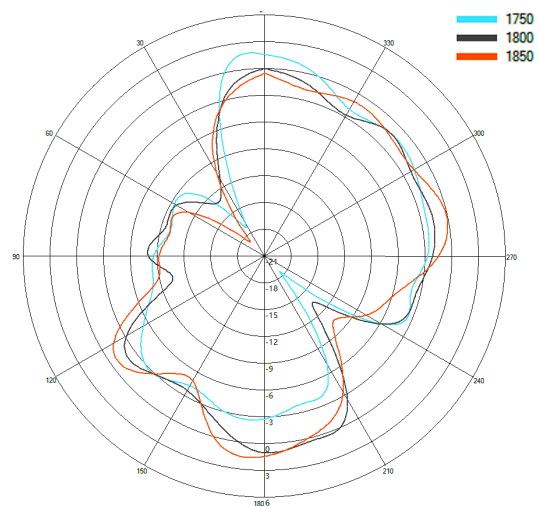
Typical H Plane- Cell C- Patterns- 1450-1500 MHz



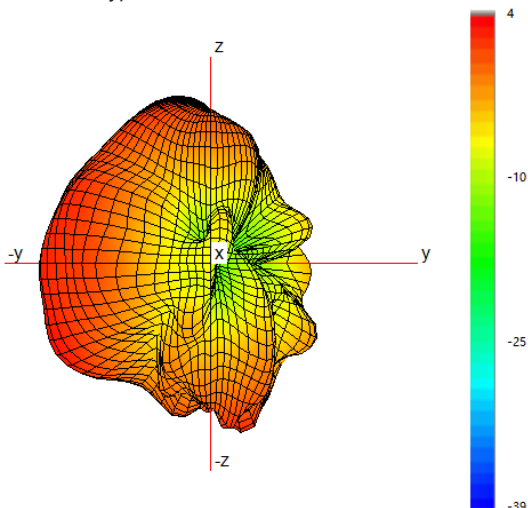
Typical 3D Pattern- Cell C - 1800 MHz



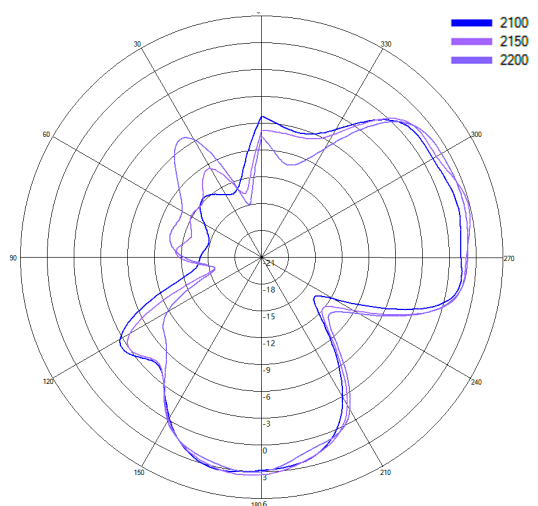
Typical H Plane- Cell C- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell C - 2150 MHz



Typical H Plane- Cell C- Patterns- 2100-2200 MHz





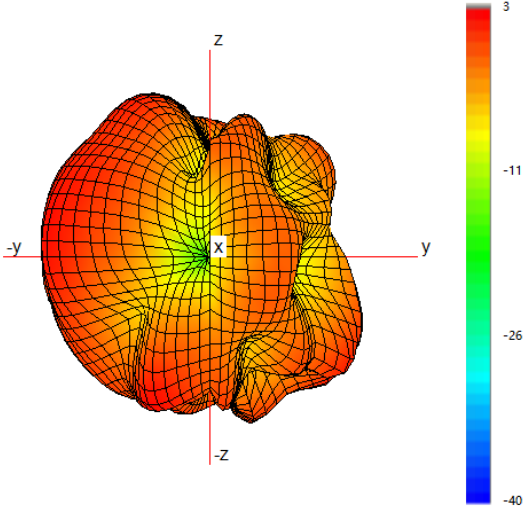
# 4x4 MiMo 4G/5G Case

## Mount Antenna

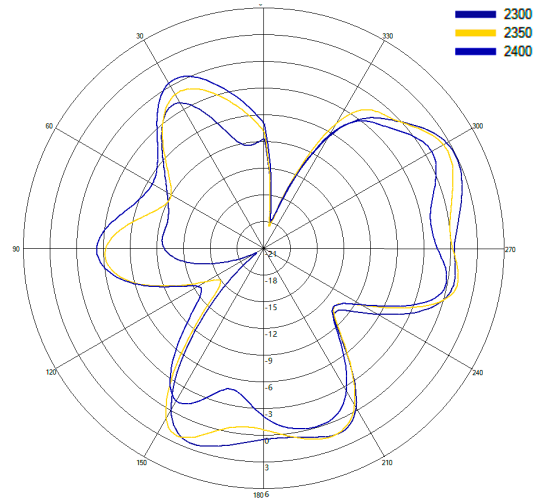
CASEANT[X]4-6-60[-X]

3D Patterns - Cell C  
Free Space - Closed

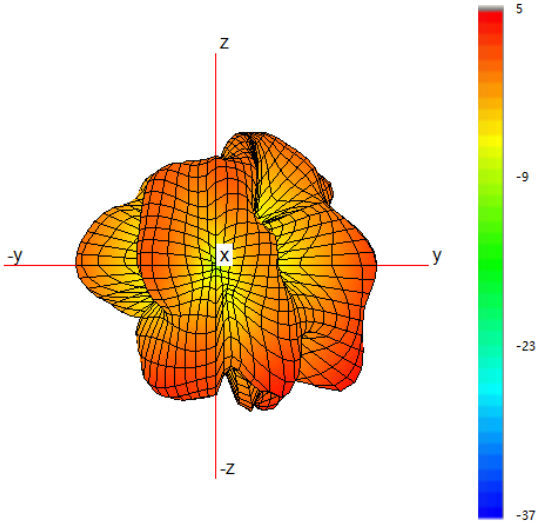
Typical 3D Pattern- Cell C - 2350 MHz



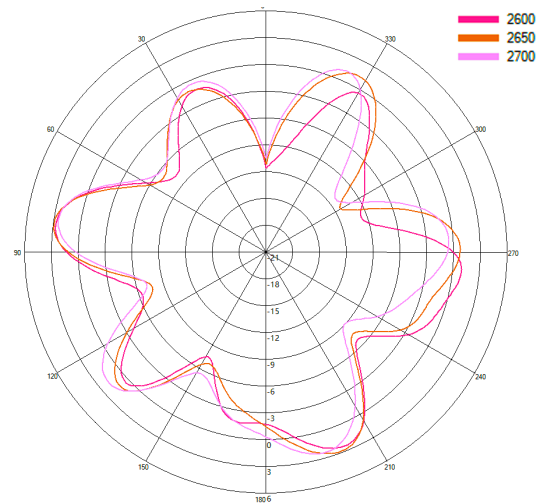
Typical H Plane- Cell C - Patterns- 2300-2400 MHz



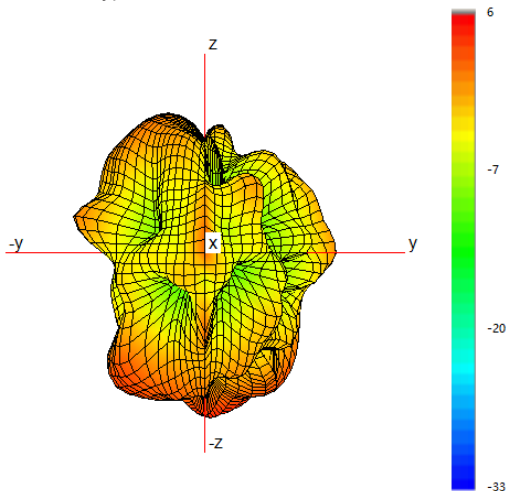
Typical 3D Pattern- Cell C - 2650 MHz



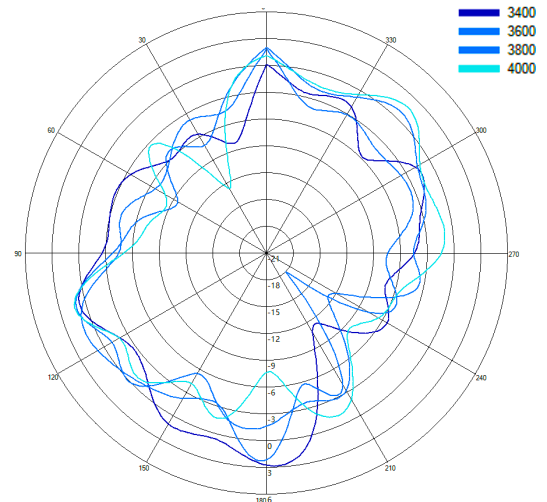
Typical H Plane- Cell C - Patterns- 2600-2700 MHz



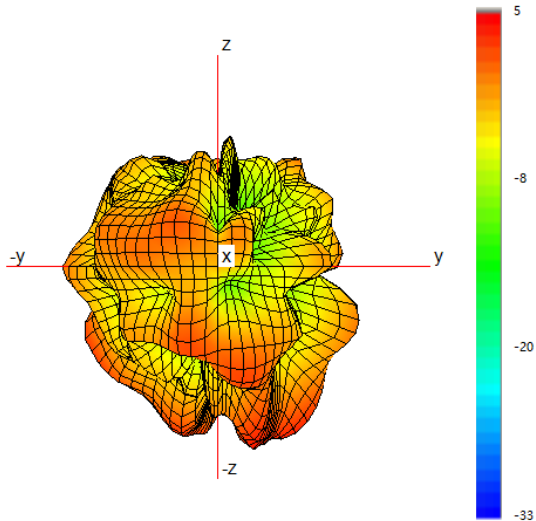
Typical 3D Pattern- Cell C - 3600 MHz



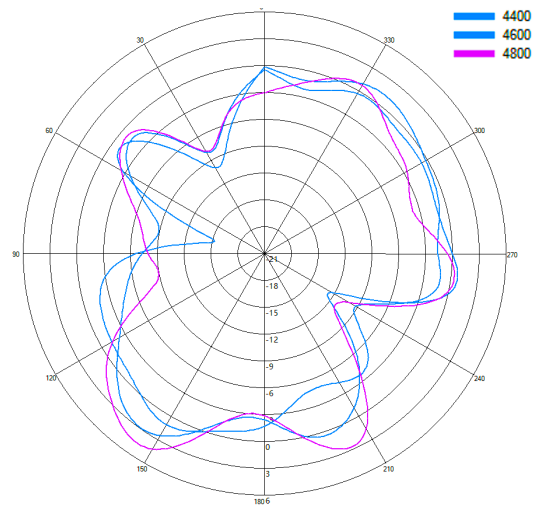
Typical H Plane- Cell C - Patterns- 3400-4000 MHz



Typical 3D Pattern- Cell C - 4700 MHz



Typical H Plane- Cell C - Patterns- 4400-4800 MHz



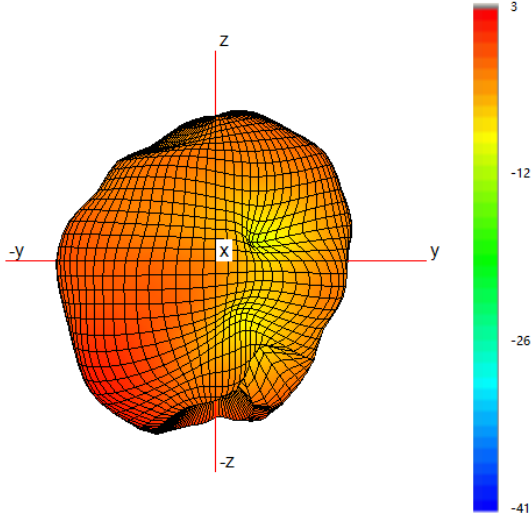
# 4x4 MiMo 4G/5G Case

## Mount Antenna

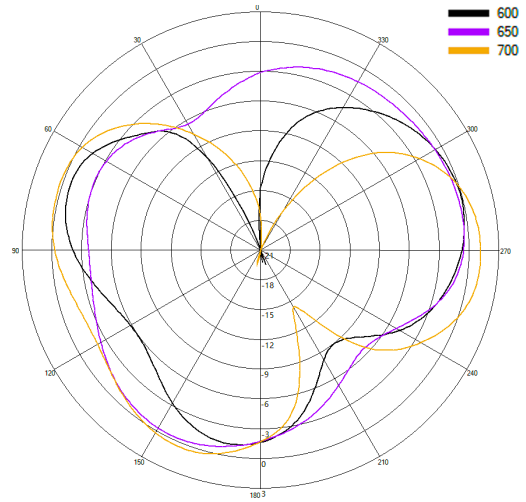
CASEANT[X]4-6-60[-X]

3D Patterns - Cell D  
Free Space - Closed

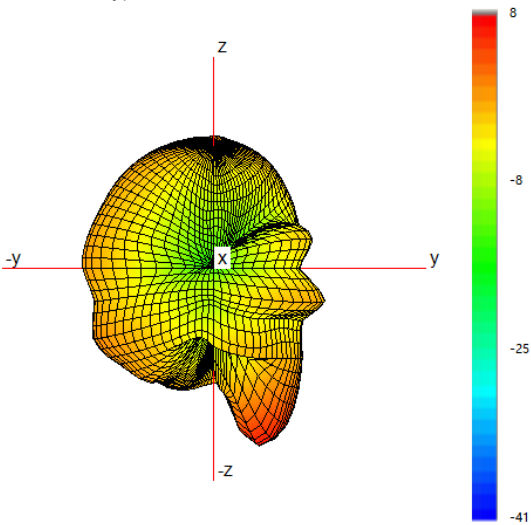
Typical 3D Pattern- Cell D - 650 MHz



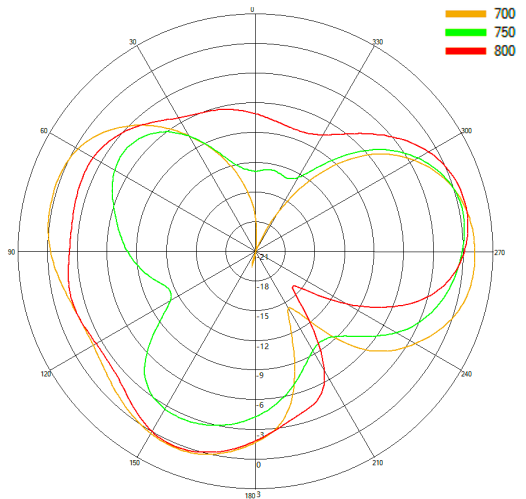
Typical H Plane- Cell D - Patterns- 600-700MHz



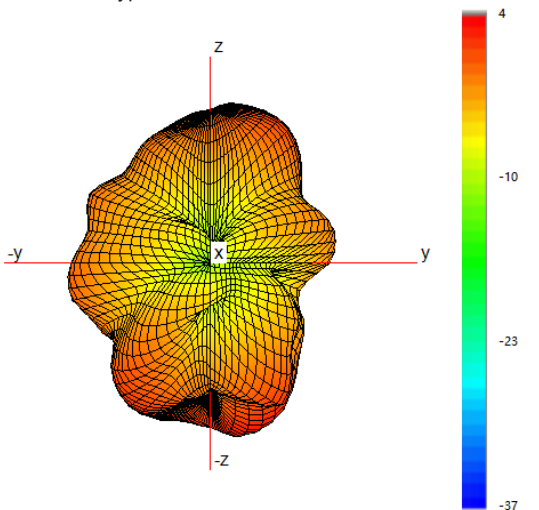
Typical 3D Pattern- Cell D - 750 MHz



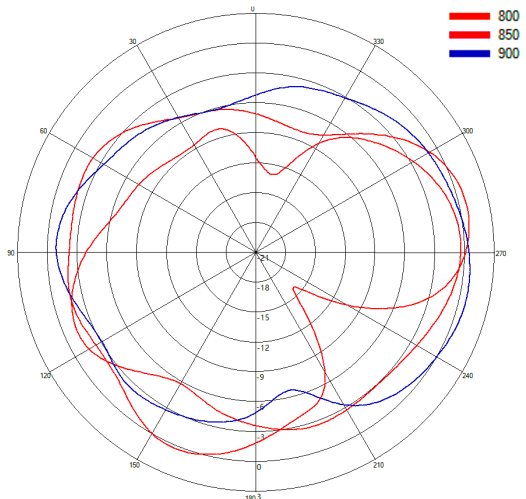
Typical H Plane- Cell D - Patterns- 700-800MHz



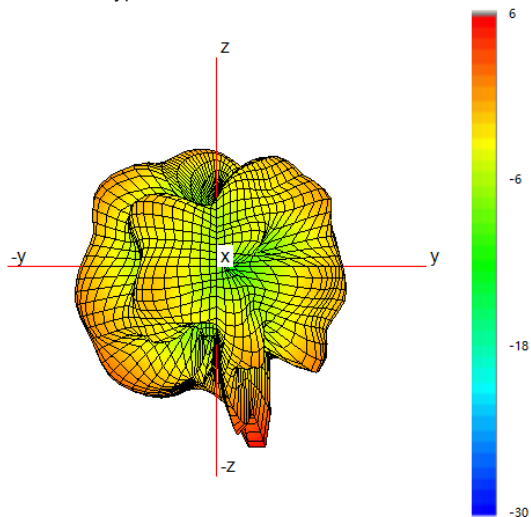
Typical 3D Pattern- Cell D - 850 MHz



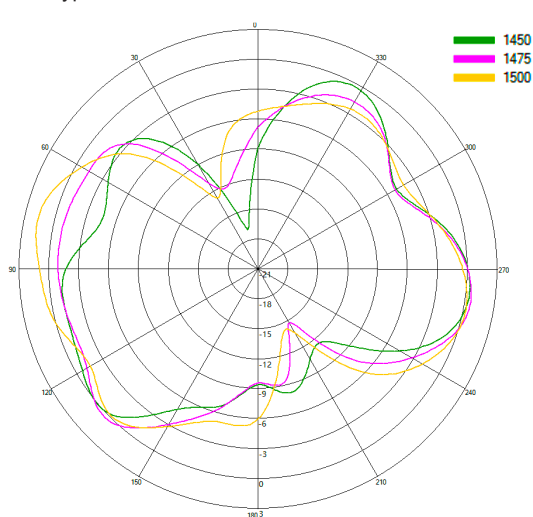
Typical H Plane- Cell D - Patterns- 800-900MHz



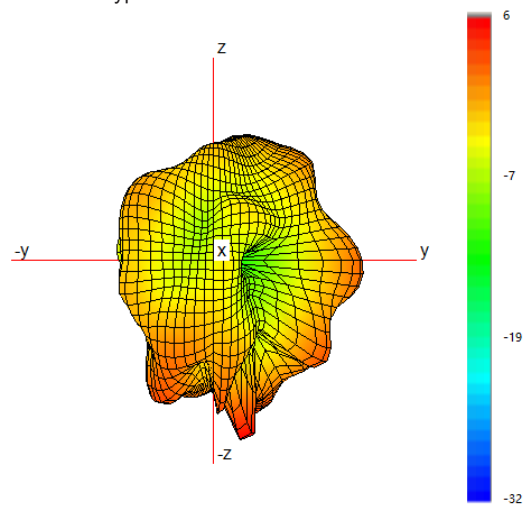
Typical 3D Pattern- Cell D - 1475 MHz



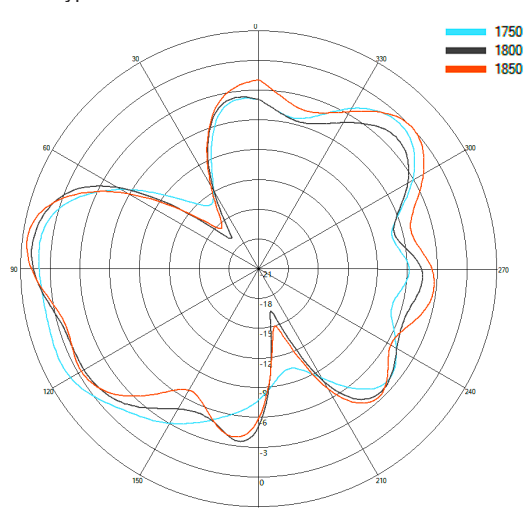
Typical H Plane- Cell D- Patterns- 1450-1500 MHz



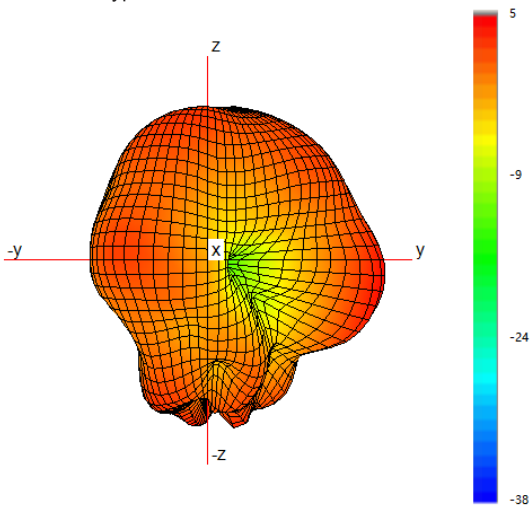
Typical 3D Pattern- Cell D - 1800 MHz



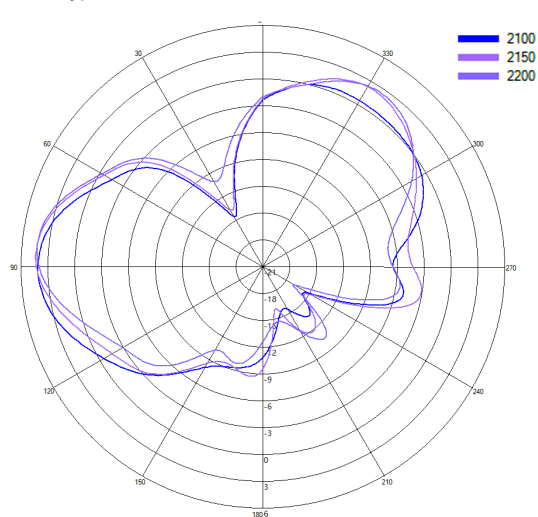
Typical H Plane- Cell D- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell D - 2150 MHz



Typical H Plane- Cell D- Patterns- 2100-2200 MHz



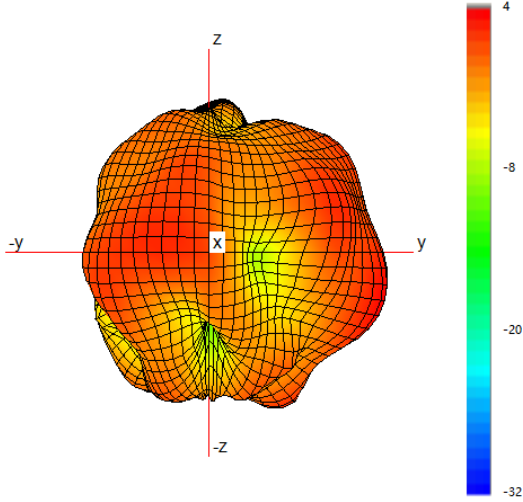
# 4x4 MiMo 4G/5G Case

## Mount Antenna

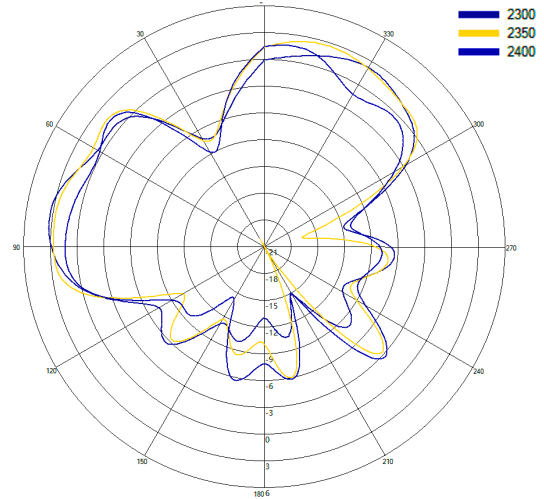
CASEANT[X]4-6-60[-X]

3D Patterns - Cell D  
Free Space - Closed

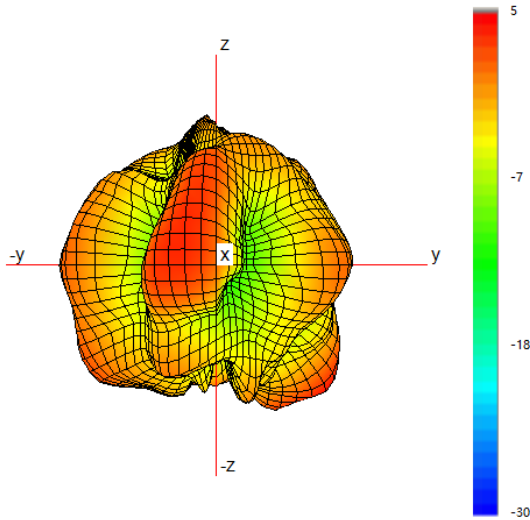
Typical 3D Pattern- Cell D - 2350 MHz



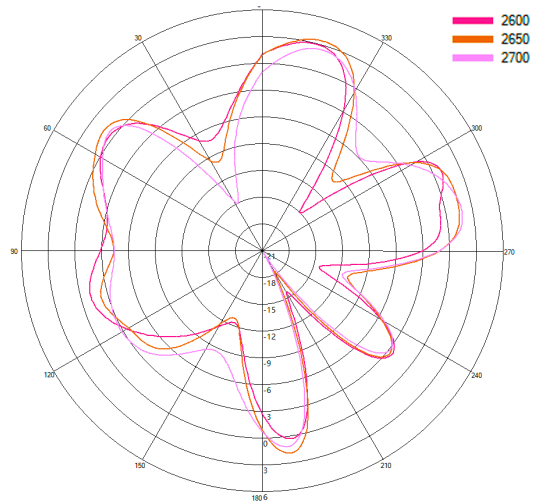
Typical H Plane- Cell D - Patterns- 2300-2400 MHz



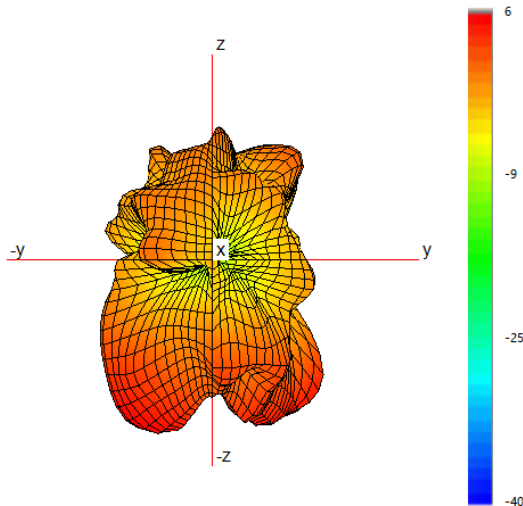
Typical 3D Pattern- Cell D - 2650 MHz



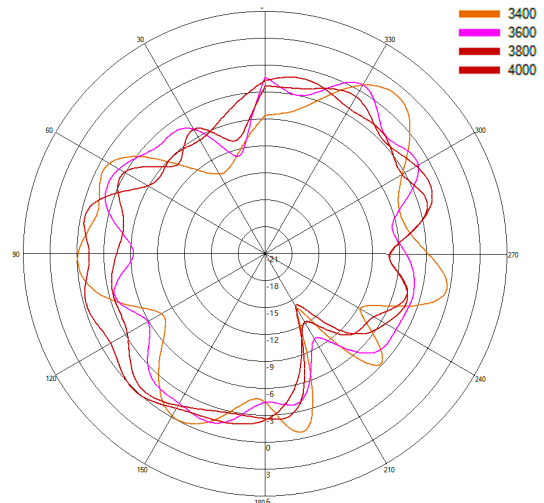
Typical H Plane- Cell D - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell D - 3600 MHz

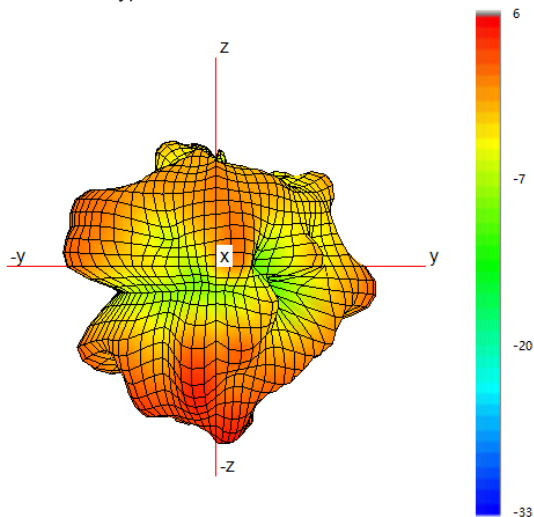


Typical H Plane- Cell D - Patterns- 3400-4000 MHz

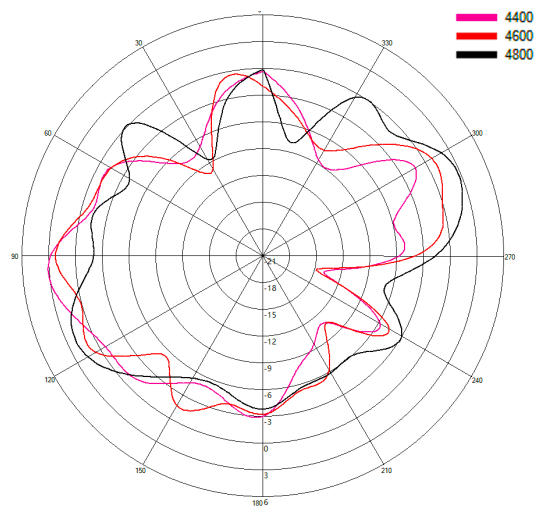


3D Patterns - Cell D  
Free Space - Closed

Typical 3D Pattern- Cell D - 4700 MHz



Typical H Plane- Cell D - Patterns- 4400-4800 MHz



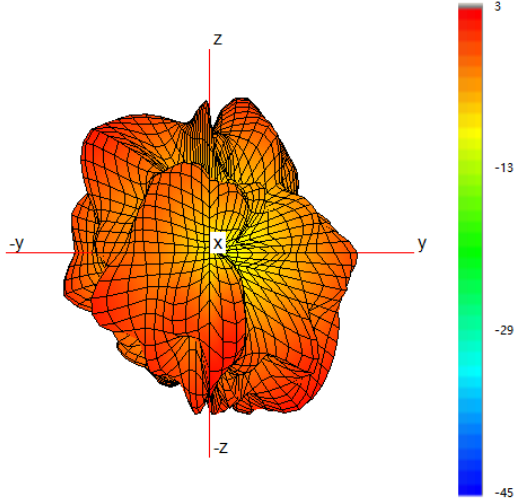
# 4x4 MiMo 4G/5G Case

## Mount Antenna

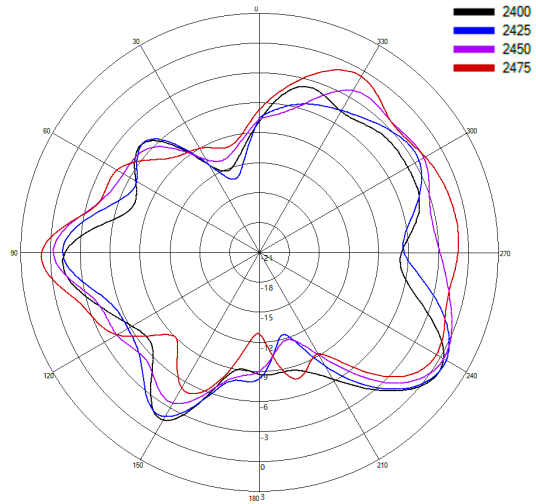
CASEANT[X]4-6-60[-X]

3D Patterns -WiFi-1  
Free Space - Closed

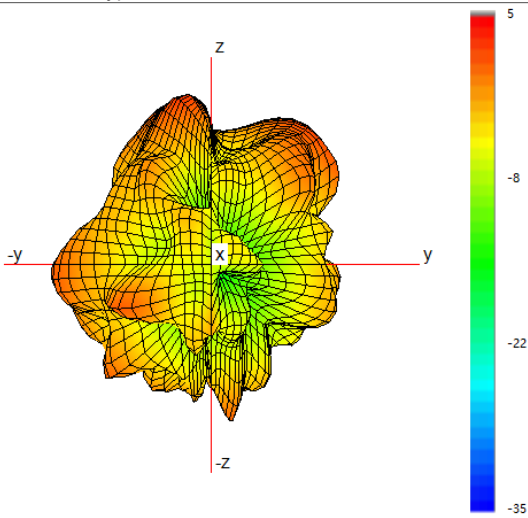
Typical 3D Pattern- WiFi - 1 - 2450 MHz



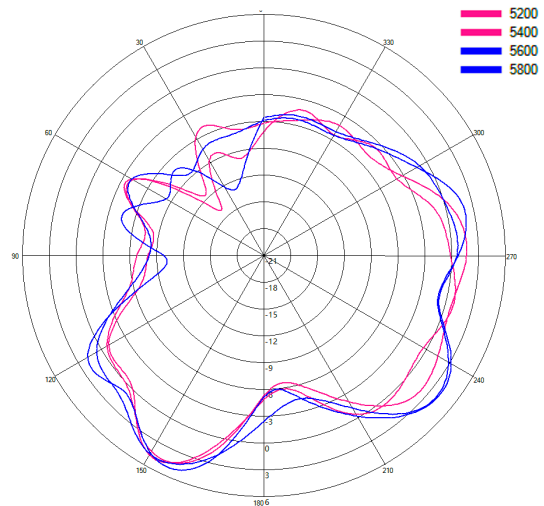
Typical H Plane- WiFi - 1 - Patterns- 2400-2475MHz



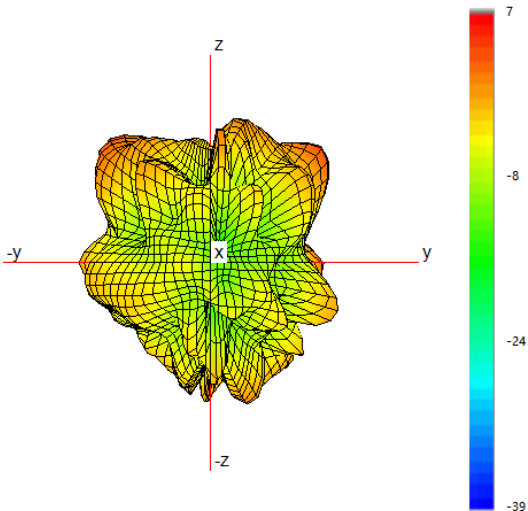
Typical 3D Pattern- WiFi - 1 - 5500 MHz



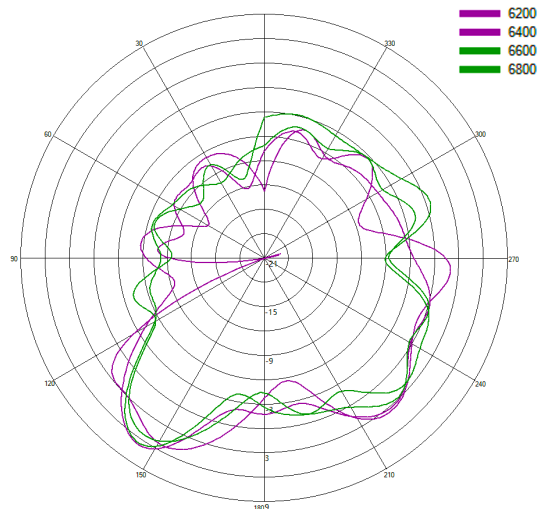
Typical H Plane- WiFi - 1 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 1 - 6500 MHz

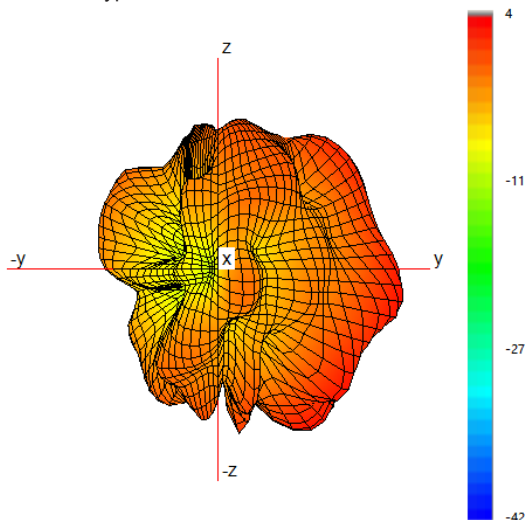


Typical H Plane- WiFi - 1 - Patterns- 6200-6800MHz

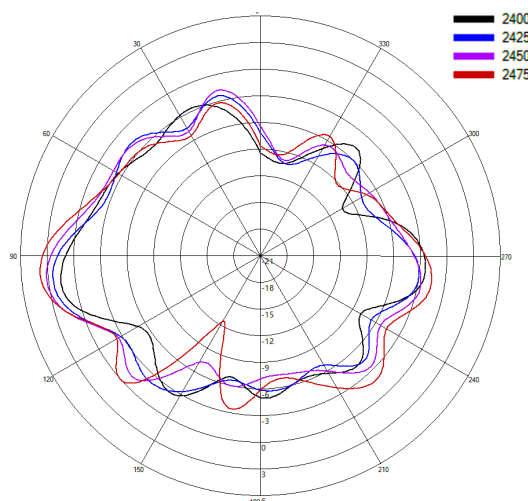


3D Patterns -WiFi-2  
Free Space - Closed

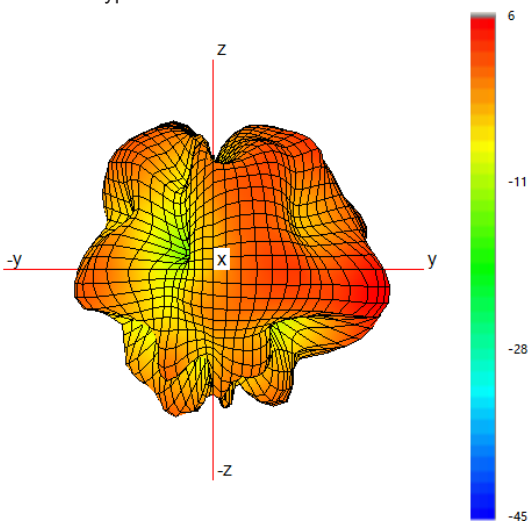
Typical 3D Pattern- WiFi - 2 - 2450 MHz



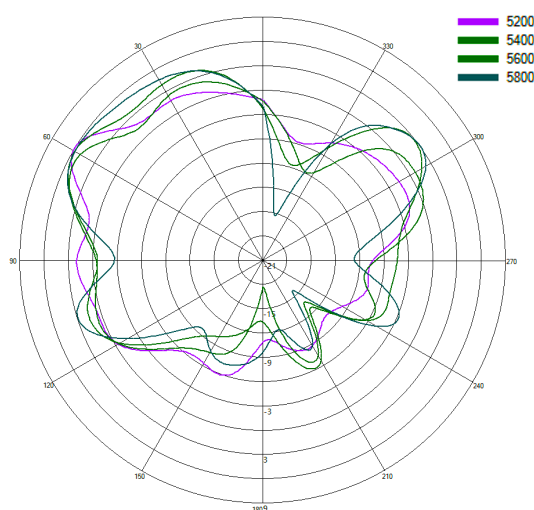
Typical H Plane- WiFi - 2 - Patterns- 2400-2475MHz



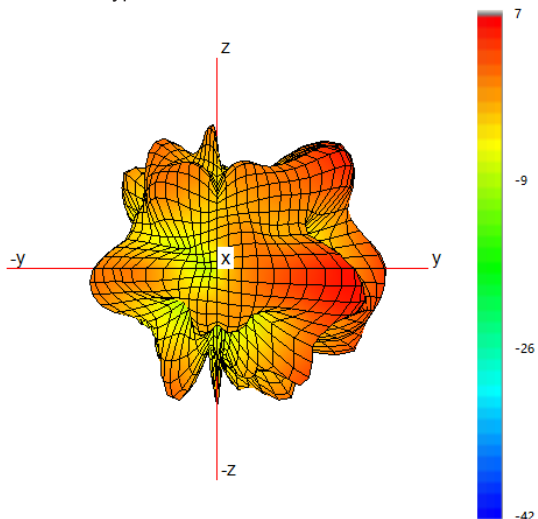
Typical 3D Pattern- WiFi - 2 - 5500 MHz



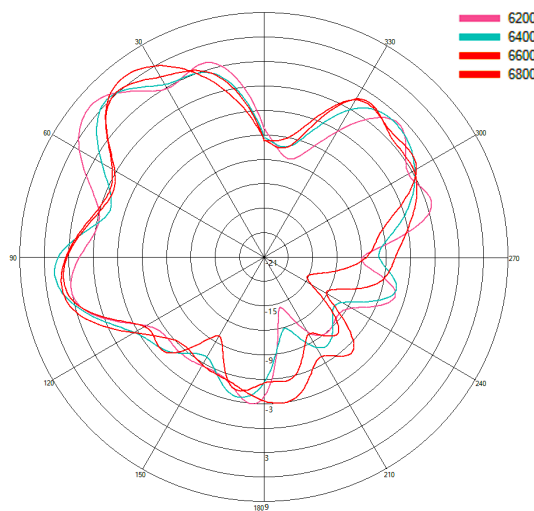
Typical H Plane- WiFi - 2 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 2 - 6500 MHz



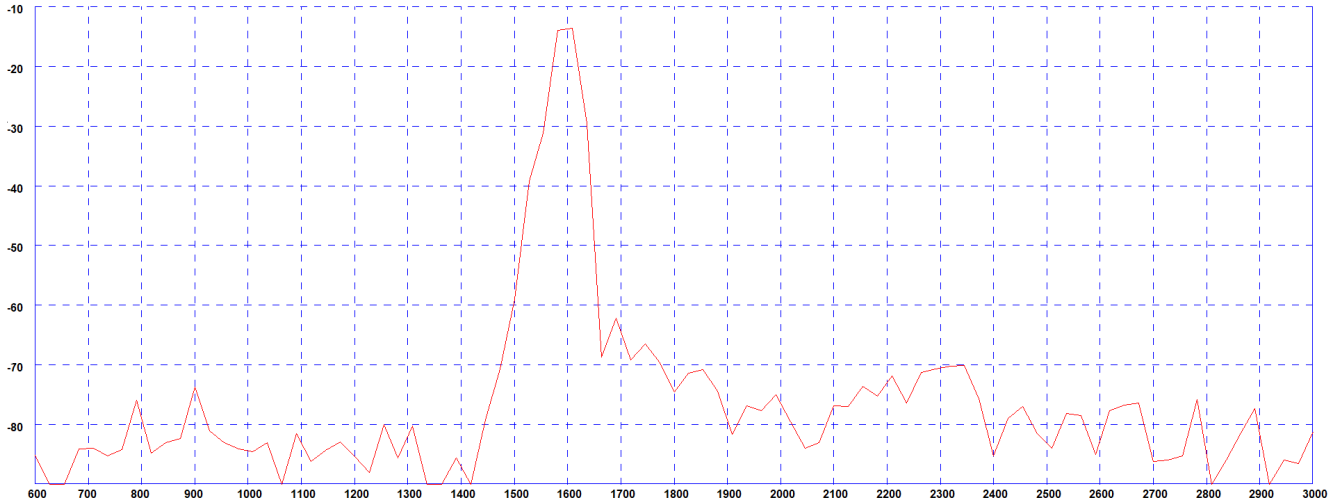
Typical H Plane- WiFi - 2 - Patterns- 6200-6800MHz



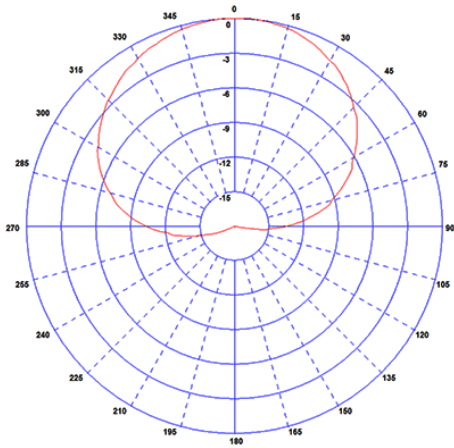


Electrical Data- L1  
GPS/GNSS

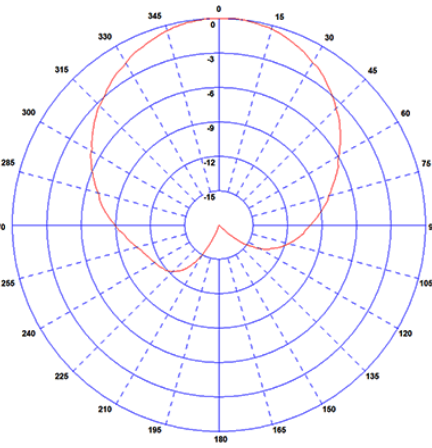
Swept Peak Gain GPS/GNSS



Typical E Plane Pattern - GPS/GNSS 1575 MHz

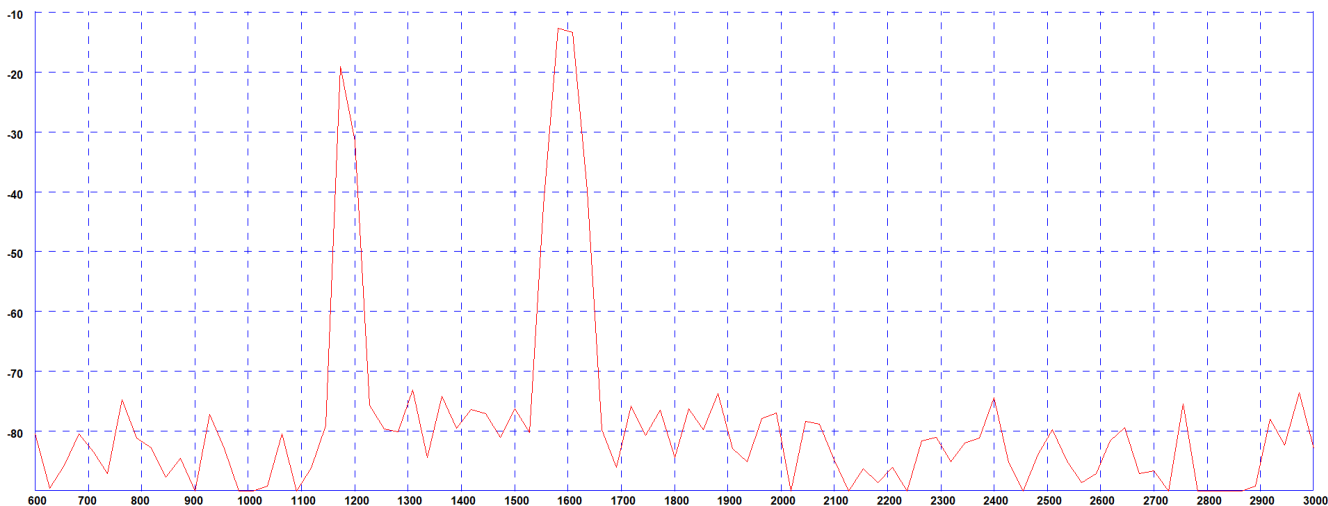


Typical E Plane Pattern - GPS/GNSS 1602 MHz

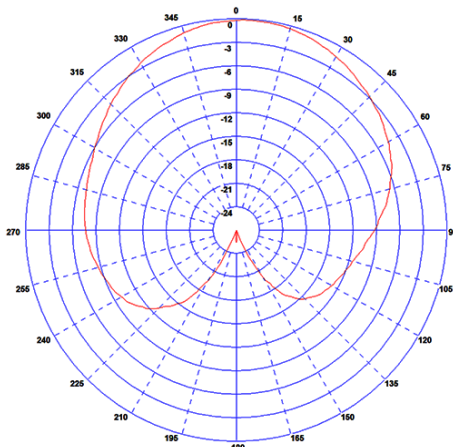


GPS/GNSS Measurements taken on 190x190mm (7.4" x 7.4") ground plane excluding cable loss

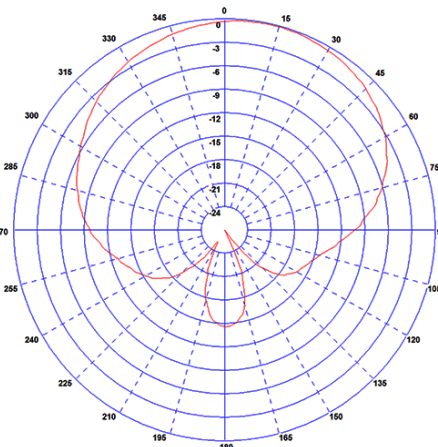
Swept Peak Gain GPS/GNSS



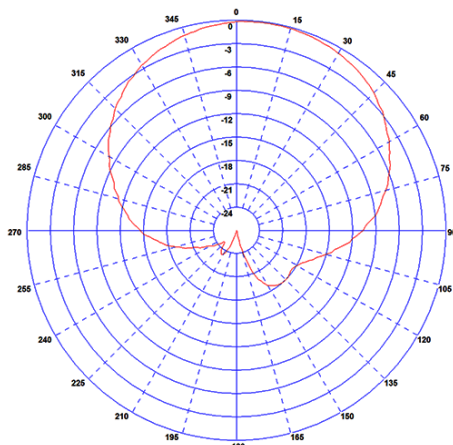
Typical E Plane Pattern - GPS/GNSS 1575 MHz



Typical E Plane Pattern - GPS/GNSS 1602 MHz



Typical E Plane Pattern - GPS/GNSS 1176 MHz



GPS/GNSS Measurements taken on 190x190mm (7.4" x 7.4") ground plane excluding cable loss